User's Manual

SMARTDAC+

SMARTDAC+ STANDARD
Universal Viewer
User's Manual

vigilantplant.®

YOKOGAWA
Yokogawa Electric Corporation

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1st Edition

Introduction

This manual explains how to use Universal Viewer. To ensure correct use, please read this manual thoroughly before beginning operation.

Notes

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Revisions

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Software Product: SMARTDAC+ STANDARD Universal Viewer

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SMARTDAC+ STANDARD Universal Viewer

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How to Use This Manual

Structure of the Manual

This manual contains five chapters.

Chapter	Title and Description
1	**Before Using the Product** Gives an overview of Universal Viewer and explains the PC system requirements for the software.
2	**Basic Operation** Explains common data file operations, such as how to start the software, how to open data files, and how to connect to data files.
3	**Displaying and Converting Data** Explains how to set display conditions of data files and how to convert data into Excel and ASCII formats.
4	**Saving and Printing Data** Explains how to save data display conditions and how to print data.
5	**Troubleshooting** Lists error messages and explains how to deal with them.

Scope of This Manual

This manual does not explain the basic operations of your PC's operating system. For this information, read the Windows user's guide or related materials.

Conventions Used in This Manual

Unit

K	Denotes 1024. Example: 768K (file size)
k	Denotes 1000.

Notes

	Improper handling or use can lead to injury to the user or damage to the instrument. This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."
WARNING	Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.
CAUTION	Calls attention to actions or conditions that could cause light injury to the user or cause damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.
Note	Calls attention to information that is important for the proper operation of the instrument.

Reference Item

▶	Reference to related operation or explanation is indicated after this mark. Example: ▶ section 4.1

Conventions Used in the Procedural Explanations

Bold characters	Indicates character strings that appear on the screen. Example: **Voltage**
Procedure **Explanation**	Carry out the procedure according to the step numbers. All procedures are written under the assumption that you are starting operation at the beginning of the procedure, so you may not need to carry out all the steps in a procedure when you are changing the settings. The explanation section describes limitations and related information about the operation.

Images

The images used in this manual may differ from those that actually appear in the software. Such differences do not affect the procedural explanation.

Products That This Manual Covers*

Product	Version
SMARTDAC+ STANDARD Universal Viewer	Up to R.1.01.xx

*** For the types of files that can be displayed, see section "1.1.1 Files That Can Be Displayed and Their Extensions".**

Revision history

Edition	Explanation
1	New edition

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1.1 Overview of Universal Viewer

This manual describes Universal Viewer.
You can use Universal Viewer to display on screen and print the following types of data that is generated by recorders.

- Display data files
- Event data files
- TLOG data files
- Report data files (including hourly, daily, monthly, batch, and daily-custom, and free reports)
- Manual sampled data files

Multiple data files can be displayed simultaneously in separate windows. You can link and convert data files that are displayed.

1.1.1 Files That Can Be Displayed and Their Extensions

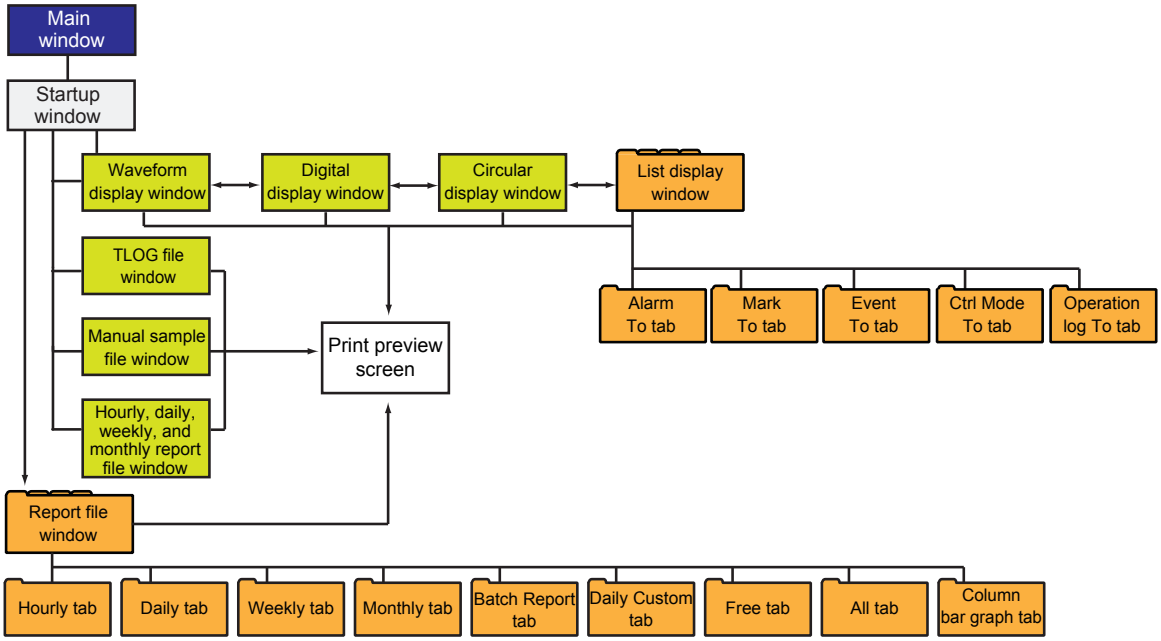
The table below shows the types and extensions of files that Universal Viewer can display.

<table>
<tr><th colspan="2">File Type (Extension)
Display Type</th><th>Display Data File
.GDS,.DAD,*.DBD, *.DSD,*.dds,*.cds</th><th>Event Data File
.GEV,.DAE,*.DBE, *.DSE,*.dev,*.cev</th><th>TLOG Data File
*.dtg</th><th>Report Data File
.GRE,.DAR,*.dhr, *.ddr,*.dwr,*.dmr</th><th>Manual Sampled Data File
.GMN,.DAM, *.dmn</th></tr>
<tr><td colspan="2">Waveform Display</td><td>Yes</td><td>Yes</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td colspan="2">Digital Display</td><td>Yes</td><td>Yes</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td colspan="2">Circular Display</td><td>Yes</td><td>Yes</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td rowspan="5">List Display</td><td>Alarm List</td><td>Yes</td><td>Yes</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Mark List</td><td>Yes</td><td>Yes</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Event List[1]</td><td colspan="2">*.cds only | *.cev only
(CX1000/CX2000)</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Control Mode List[1]</td><td colspan="2">*.cds only | *.cev only
(CX1000/CX2000)</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Operation Log List[2]</td><td colspan="2">*.DSD and *.DBD only | *.DSE and *.DBE only
(DX100P/DX200P, DX1000/AS1, DX2000/AS1)</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td colspan="2">TLOG Display[3]</td><td>—</td><td>—</td><td>*.dtg only
(CX1000/CX2000, DX100/DX200, DX100P/DX200P, MV100/MV200)</td><td>—</td><td>—</td></tr>
<tr><td colspan="2">Report Display</td><td>—</td><td>—</td><td>—</td><td>Yes</td><td>—</td></tr>
<tr><td colspan="2">Manual Sample Display</td><td>—</td><td>—</td><td>—</td><td>—</td><td>Yes</td></tr>
</table>

1 Displays files created by a CX1000/CX2000
2 Displays files created by a DX100P/DX200P, DX1000/AS1, or DX2000/AS1
3 Displays files created by a CX1000/CX2000, DX100/DX200/DX200C, DX100P/DX200P, or MV100/MV200

1.1.2 Screen Transition and Displayed Contents

The figure below shows screen transitions from the main window.
→ indicates that a new window will open, and ↔ indicates that you can move between windows.
The window that opens when you open a data file varies depending on the data type and display format.



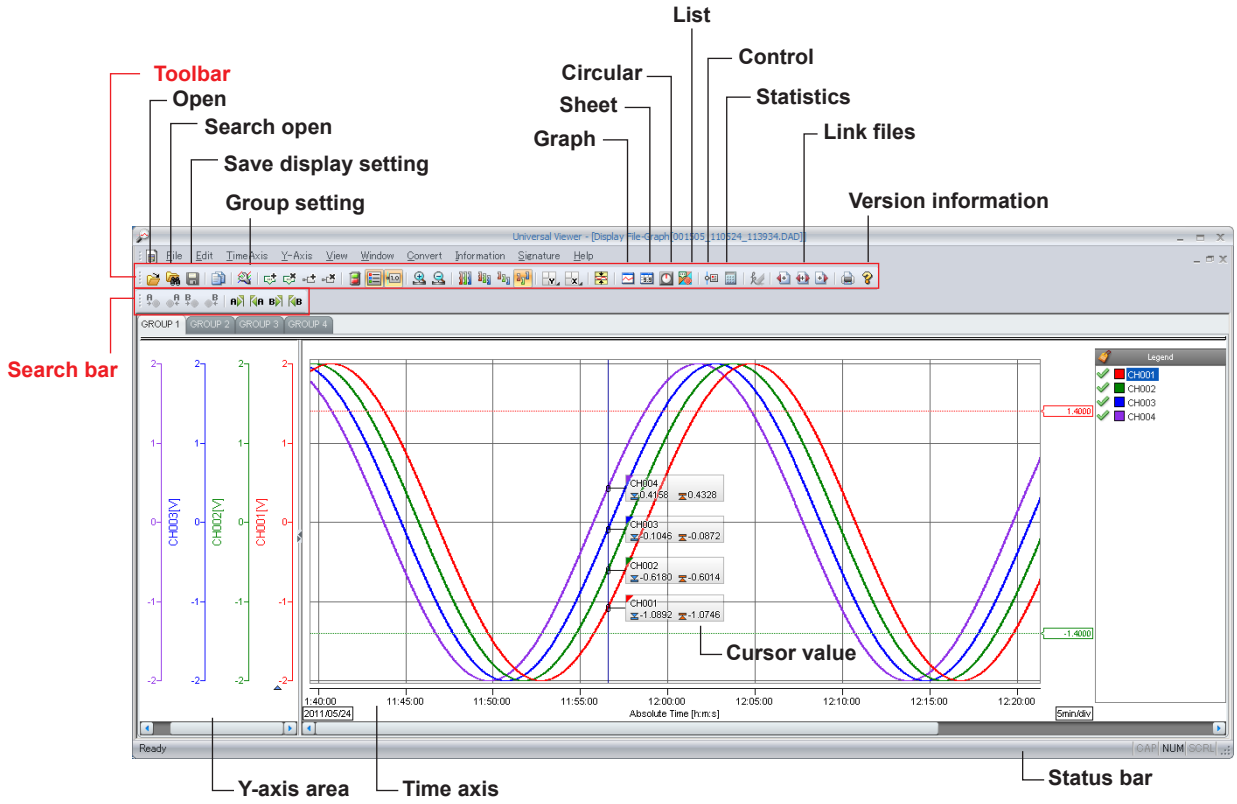
The table below lists the different screens of Universal Viewer and what they are used for.

Window and Tab Names		Displayed Content and Format
Waveform display window		Displays data as waveforms
Circular display window		Displays data as waveforms on a circular chart
Digital display window		Displays data using digital (numeric) values
List display window	Alarm To tabbed page	Displays changes in the alarm status of recording
	Mark To tabbed page	Displays mark information that is attached to data
	Event To tabbed page	Displays information on events that occurred during recording
	Ctrl Mode To tabbed page	Displays control operations that were performed during recording
	Operation Log tabbed page	Displays operation log information in data files
TLOG file display window		Displays data in TLOG data files using digital values
Hourly, daily, weekly, and monthly report file display window		Displays data in hourly, daily, weekly, and monthly data files using digital values
Report file display window	Hourly report tabbed page	Displays hourly report data in tabular format
	Daily report tabbed page	Displays daily report data in tabular format
	Weekly report tabbed page	Displays weekly report data in tabular format
	Monthly report tabbed page	Displays monthly report data in tabular format
	Batch report tabbed page	Displays batch report data in tabular format
	Daily-custom tabbed page	Displays daily-custom report data in tabular format
	Free tabbed page	Displays free data in report files
	All display tabbed page	Displays all data in report data files in tabular format
	Column bar tabbed page	Displays data in report data files in stacked bar graph format
Manual sampled file display window		Displays data in manual sampled data files using digital values
Print preview screen		Displays a print preview of the data in the active window

Note

Report data files are displayed in either the report file display window or the hourly, daily, weekly, and monthly report file display window depending on the recorder that generated the files.

Below is an example of a screen showing data.



The commands that correspond to the buttons on the toolbar and search bar are described below.
The buttons on the toolbar correspond to the commands in the menus that are displayed. If the active window does not have certain menus, the corresponding buttons on the toolbar are disabled.

Toolbar

Button	Menu	Button	Menu
	File—Open		View—Cursor Value
	File—Search Open		Time Axis—Zoom in
	File—Save Display Setting		Time Axis—Zoom out
	Edit—Copy		Y Axis—Full Zone
	View—Display Group Setting		Y Axis—Slide Zone
	Edit—Append Mark		Y Axis—Auto Zone
	Edit—Delete Mark		Y Axis—Free Zone
	Edit—Append Mark Note		Y Axis—Standard Grid(Dense Grid 1 to 4 from pull-down)
	Edit—Erase		Time Axis—Standard Grid(Dense Grid 1 to 4 from pull-down)

Toolbar continued

Button	Menu	Button	Menu
	View—Alarm		Y Axis—Clip
	View—Legend		Window—Graph
	Window—Sheet		Signature—Apply Signature
	Window—Circular		File—Link Previous File
	Window—Alarm/Mark		File—Link All Files
	Window—Control		File—Link Next File
	Window—Statistics		File—Print
	Help—About		

Search Bar

Button	Menu	Button	Menu
	Edit—Search Alarm—Right move cursor A		Edit—Search Mark—Right move cursor A
	Edit—Search Alarm—Left move cursor A		Edit—Search Mark—Left move cursor A
	Edit—Search Alarm—Right move cursor B		Edit—Search Mark—Right move cursor B
	Edit—Search Alarm—Left move cursor B		Edit—Search Mark—Left move cursor B

When you move the cursor over a toolbar or search bar button, a tooltip will appear.
You can move, show, and hide bars as you would other standard Windows toolbars.
If, on the View menu, you click Tool Bar, A/M Search Bar, or Status Bar and turn on the command, the corresponding bar appears.
If you turn off the command, the bar disappears.

1.1.3 Installation and Version Updating

Download the latest installer from YOKOGAWA's website to install and update the software.
From the Help menu, you can view the software version information and access the link to the website

1.2 PC System Requirements

1.2.1 Hardware

PC

A PC running Windows XP, Windows Vista, or Windows 7

CPU and main memory

Intel Pentium 4, 3 GHz or faster x64 or x86 processor. At least 2GB.

Hard disk

Free space of at least 100 MB (depending on the amount of data, you may need more memory)

CD-ROM drive

One CD-ROM drive

Mouse

Mouse compatible with the OS

Display

A video card that is recommended for the OS and a display that is supported by the OS, has a resolution of 1024×768 or higher, and that can show 65,536 colors (16-bit, high color) or more.

Communication Board

To perform Ethernet communication, you need a Windows-compatible Ethernet card. The TCP/IP protocol must also be installed.

Printer

Widows-compatible printer A printer driver for the Windows system that you want to use is required.

1.2.2 Operating System

OS	
Windows XP	Home Edition SP3 (excluding 64-bit editions)
	Professional SP3 (excluding 64-bit editions)
Windows Vista	Home Premium SP2 (excluding 64-bit editions)
	Business Edition SP2 (excluding 64-bit editions)
Windows 7	Home Premium SP1 (32-bit edition and 64-bit edition)
	Professional SP1 (32-bit edition and 64-bit edition)

Note

- To set the time zone, open Date and Time in Control Panel. However, do not change the time zone while Universal Viewer is running. If you do, it may affect the results of file searches based on date and time.
- If your region has daylight saving time, select the Automatically adjust clock for Daylight Saving Time check box.
- Do not use the time zone setting in autoexec.bat of Windows. If a time zone command such as “TZ=GTM0) exists in autoexec.bat, disable it by typing REM in front.
- This software cannot handle data dated after year 2037.
- You can select the format of dates displayed on the software, but when entering dates, you must use the “year/month/day) format.
- Supported OS languages are English, Japanese, Chinese, French, German, Russian, and Korean. However, make sure to use the same language for the recorder (which recorded the data), this software, and OS.
- If you want to start DAQSTANDARD Hardware Configurator from this software and view the operation log information, install Hardware Configurator in the same folder as this software.
- If you view large linked data files, processing speed may decrease depending on the CPU and RAM.
- If the PC resumes from hibernation, you may not be able to expand the viewer window. If this occurs, restart the viewer.
- Do not print more than 36500 pages at once from the PC.
- On 32-bit editions (x86), the maximum number of supported channels when displaying 32 million points is as shown in the table below.

Data Type	Channel Type	Maximum Number of Supported Channels
Display data	Math channel	4
	Measurement channel	8
Event data	Math channel	8
	Measurement channel	12

1.2.3 Other Requirements

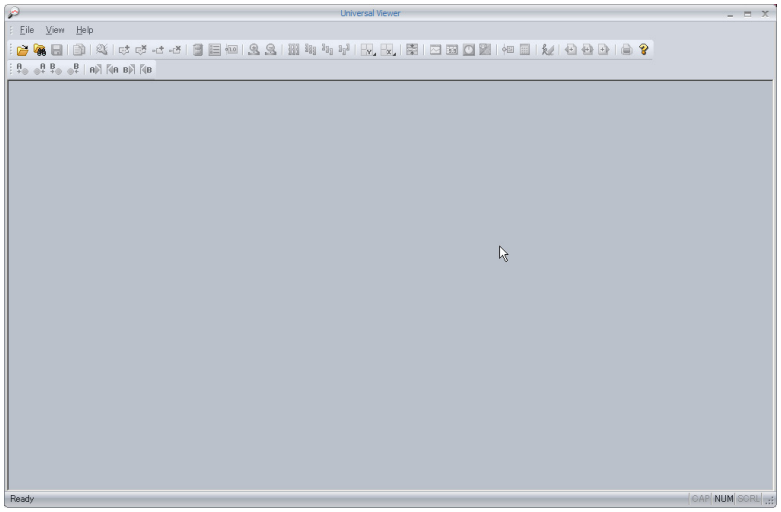
To view the user's manual of this software, you need to use Adobe Reader 7 or later by Adobe Systems.

2.1 Starting and Closing Universal Viewer

2.1.1 Starting Universal Viewer

Procedure

1. On the taskbar, click **Start**, **All Programs**, **SMARTDAC+ STANDARD**, and then **Viewer**.
   Universal Viewer starts. (No data is displayed initially.)



On Windows, you can associate data files to Universal Viewer so that when you double-click a data file, the file opens in Universal Viewer.

Changing the Style

To change the screen color, on the **View** menu, click **Style** and then **Light** or **Dark**. The default setting is **Light**.

The style cannot be changed in some windows and dialog boxes.

Changing the Date Format

You can change the date display format to one of the four types below. To do so, on the **View** menu, click **Date Format**.

- YY/MM/DD
- MM/DD/YY
- DD/MM/YY
- DD.MM.YY

Decimal Point

To change the decimal point character in Universal Viewer, on the **View** menu, click **Decimal Point**.

Toolbar, Search Bar, and Status Bar

To show or hide the bars, on the View menu, click **Tool Bar**, **Search Bar**, or **Status Bar**.

2.1.2 Closing Universal Viewer

Procedure

1. On the **File** menu, click **Exit**. Or, click the × button.
   If you have changed the settings, the message “Save changes to *file name*.***?” appears.

To save the settings, click **Yes**.
Otherwise, click **No**.

2.2 Opening a Data File

On Universal Viewer, you can use any of the following methods to open a data file.

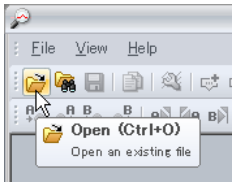
- Specify a file name and open the data file
- Drag a data file to open it
- Open a data file from search results

2.2.1 Specifying a File Name and Opening the Data File

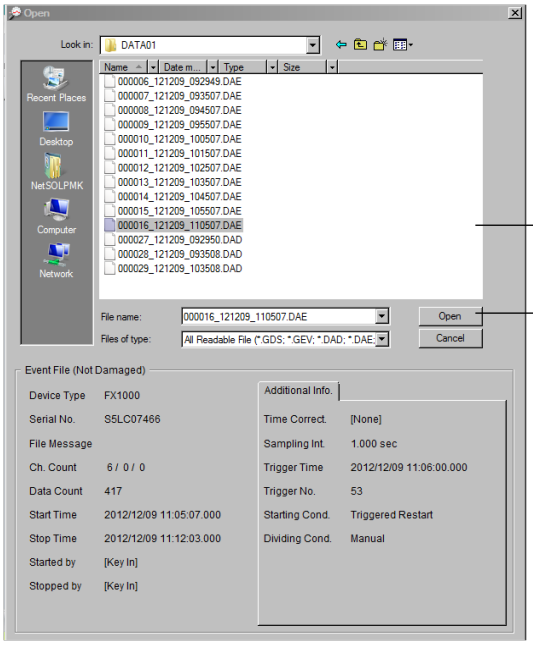
In the Open dialog box, specify the file name, and open the data file.

Procedure

1 On the **File** menu, click **Open**. Or, click **Open** on the toolbar.



The Open dialog box appears.



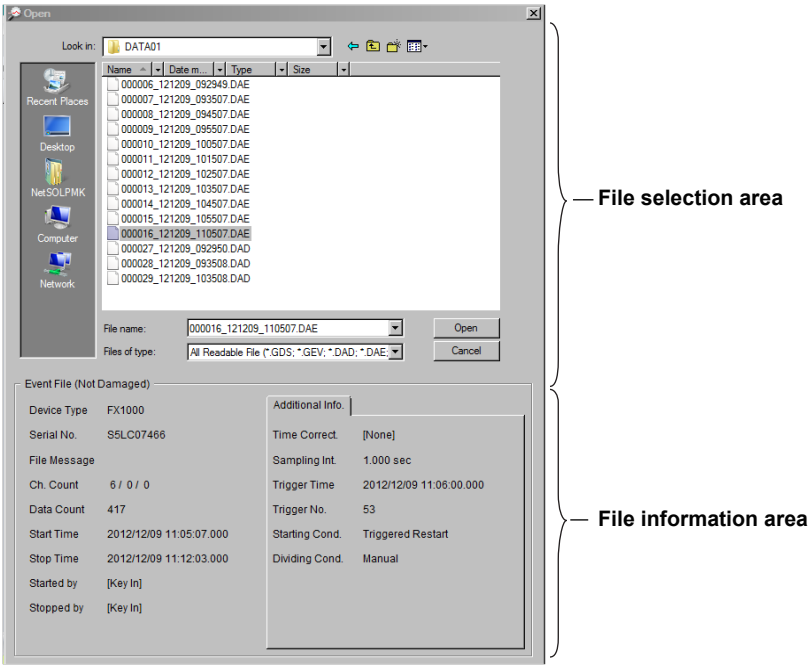
Select the data file to display.

Click here. The file will open.

2 In the dialog box, select the file you want to open, and click **Open**. Or, double-click the file.
The data appears in the window.

Explanation

The Open dialog box consists of the file selection area (top half) and the file information display area (bottom half).



File Selection Area

The area for selecting the data file to open has the same structure as a standard Windows open dialog box. The available data file options are shown below.

Option	Description
All Readable File (*.GDS; *.GEV; *.DAD; *.DAE; *.DBD; *.DBE; *.DSD; *.DSE; *.dds; *.dev; *.cds; *.cev; *.dtg; *.ldx; *.GRE; *.d?r; *.GMN; *.DAM; *.dmn)	Displays all loadable files
Display File (*.GDS; *.DAD; *.DBD; *.DSD; *.dds; *.cds)	Displays only display data files
Event File (*.GEV; *.DAE; *.DBE; *.DSE; *.dev; *.cev)	Displays only event data files
TLOG File (*.dtg)	Displays only TLOG data files
Link File (*.ldx)	Displays only connection information data files
Report File (*.GRE; *.d?r)	Displays report data files or hourly, daily, weekly, and monthly data files
Manual Sample File (*.GMN; *.DAM; *.dmn)	Displays only manual sampled data files
All File (*.*)	Displays all files in the folder

File Information Display Area

The file information display area shows information about the selected file. You can also view the detailed information of the data file in the About Document dialog box.

▶ Viewing file information (**section 2.4**)

Note

- The information displayed in the information display area of the Open dialog box varies depending on the data file type.
- If you select a file by entering its file name, the file information will not be displayed.

2.2.2 Dragging a Data File to Open It

You can open a data file by dragging the file to the Universal Viewer window.

Procedure

1. From the desktop or Explorer, drag the data file that you want to view in the main window.
   The data appears in the window.

2.2.3 Opening a Data File from Search Results

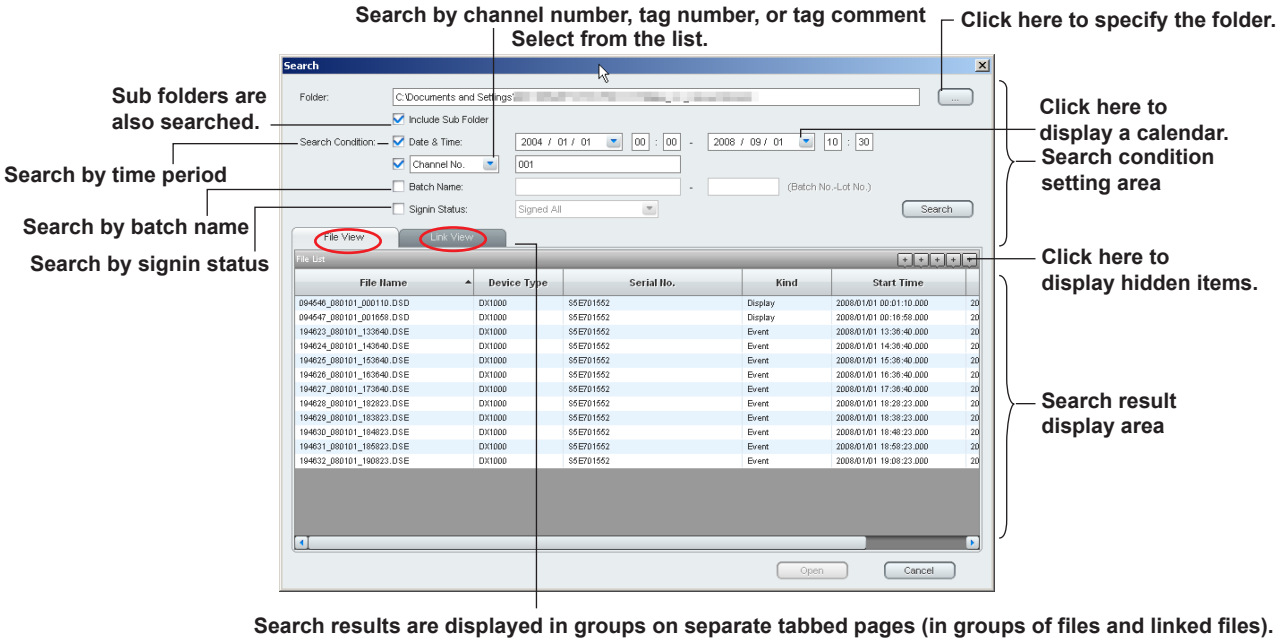
In the Search Open dialog box, search for the data file, and open it.
You can specify the following search conditions.

- Search by time period
- Search by channel number, tag number, or tag comment
- Search by batch name
- Search by signin status

Procedure

1. On the **File** menu, click **Search Open**. Or, click **Search Open** on the toolbar.
   The Search Open dialog box appears.

2. Specify the search conditions, and click **Search**.
   The search results are displayed.

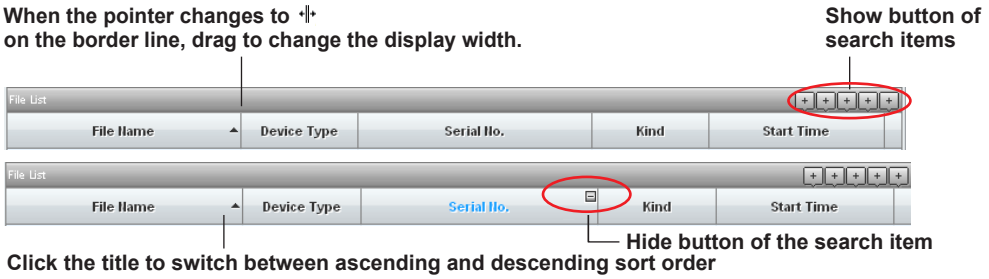


Search results are displayed in groups on separate tabbed pages (in groups of files and linked files).

Note

- If there is no folder in the search range, the error “No such folder” will appear.

3 If you want to adjust the search result display, carry out the following operation.


When the pointer changes to ⇹ on the border line, drag to change the display width.
Show button of search items
File List
File Name
Device Type
Serial No.
Kind
Start Time
Hide button of the search item
Click the title to switch between ascending and descending sort order

Move the cursor over a display button to show the item title in a tooltip. Click the button for the item you want to show to display the corresponding search results.
If you move the cursor over a title, a hide button appears. Click it to hide the item. You cannot hide the file name.
If you click an item title, a sort icon will appear. Click it to change the sort order between ascending and descending.

4 From the search results, double-click the file you want to open; or select the file, and click **Open**.
The data appears in the window.

Explanation

Displaying Search Results

In the Search Open dialog box, search results are displayed on two tabbed pages. The file view tabbed page shows search results in units of individual files, and the link view tabbed page shows the results in units of file links. A “file link” means a set of data files that are linked and treated as one unit.
The table below shows the displayed search result items and their details.

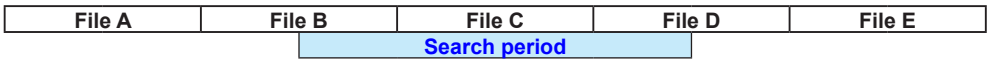
Display Item		Display Details	Description
File Name		File name including the extension	
Model		Model that sampled the data	
Serial No.[1]		Serial number of the instrument that sampled the data	
Type[1]		Display or event	Data file type
Process Type[1]		Batch, Continuous, —	Recording process A dash is displayed if there is no information.
Data Count[1]		Data count	The number of data entries from the first data entry of the first file to the last data entry of the last file. This includes power-failure data entries and missing-file data entries. However, data entries of missing files at the front and end are not counted.
Start Time		Data start time	Displays the time of the first data entry of the first file
Stop Time		Data stop time	Displays the time of the last data entry of the last file
Batch Name		Batch name	A dash is displayed if there is no batch information.
Status[1]		Data file status (normal or error)	If the file is corrupt or the data is erroneous, an error is displayed.
Duplicate[2]		Yes or no	Displays whether there are duplicate files.
File Missing[2]		Yes or no	Displays whether there are missing files in the batch.
Signin Status	Signature 1 Signature 2 Signature 3	No sig., pass, fail, or —	No sig.: Not signed. Pass: Signature result is pass. Fail: Signature result is fail. —: No signature information
	Sig. 1 User Name Sig. 2 User Name Sig. 3 User Name	User name, —	Displays the user name if already signed. Displays a dash if there is no signature information.

1 Not displayed by default.
2 Displayed only on the link view tabbed page.

Search by Time Period

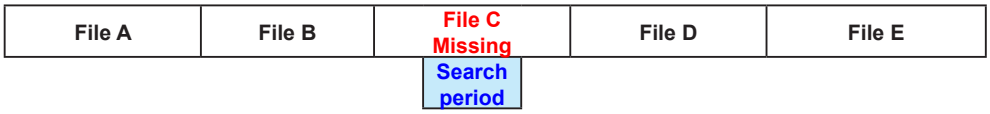
You can specify a search period to perform the search.
You can specify dates by clicking the arrow and using the calendar that appears or selecting and entering the numbers directly.
The selectable range is from “1990/01/01 00:00” to “2037/12/31 23:59.”
When you specify a period, if any section of a file overlaps with the search period, the file appears in the search results. Below are several examples for different search periods.

Example 1. When consecutive data files A to E all exist



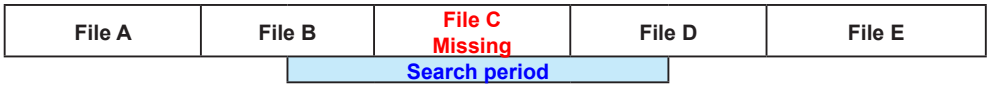
Files B, C, and D will appear on the file view tabbed page.
If the files are linked, files A to E are detected as a single unit and displayed on the link view tabbed page.

Example 2. When a portion of the linked files does not exist and the search period is within that portion



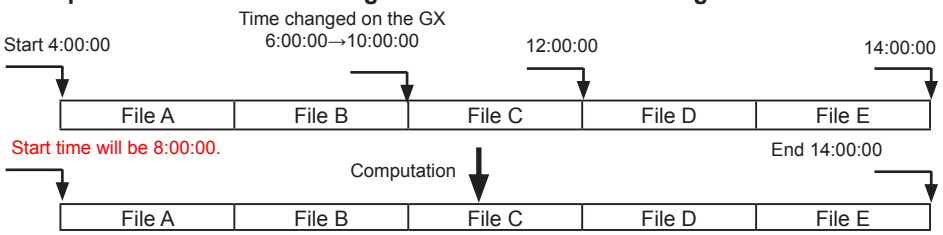
No files are displayed on the file view tabbed page.
If the data files are linked, no file links are displayed on the link view tabbed page.
However, in the case of a batch file, files A to E are detected as a single unit and displayed on the link view tabbed page.

Example 3. When a portion of the linked files does not exist and the search period includes that portion



Files B and D, which overlap the search period, are displayed on the file view tabbed page.
If the files are linked, the unit consisting of files A and B and the unit consisting of files D and E are displayed on the link view tabbed page. In the case of a batch file, files A to E are detected as a single unit and displayed on the link view tabbed page.

Example 4. If the time was changed in the middle of recording



If the time on the recorder was changed during recording, the timestamps of data entries are calculated in reference to the last data entry position. As shown above, if the time is changed from 6:00:00 to 10:00:00, the original timestamps from 4:00:00 to 6:00:00 are assumed to be 8:00:00 to 10:00:00. These timestamps are used in the search, so if you set the search period as 5:00:00 to 6:00:00, nothing will be detected. If you set the search period as 8:00:00 to 9:00:00, files will be detected and displayed on the link view tabbed page.

Searching by Channel Number, Tag Number, or Tag Comment

From the list box, select Channel No., Tag No., or Tag Comment, and then enter the character string you want to search for. Data files that contain the string will be displayed in the search results.
You cannot specify a character string that includes a space.

Searching by Batch Name

Select the Batch Name check box, and enter the batch number and lot number.
You can also search by specifying only the batch number or only the lot number. If you select the check box and leave both the batch number and lot number blank, data files that include batch information will be displayed in the search results.

Searching by Signin Status

Of the data files that include signature information, data files with the selected signin statuses are searched. From the list, select the signin status you want to search for.
The available options and their descriptions are shown below.

Option	Description
1No sig.	Files without Signature 1
2No sig.	Files without Signature 2
3No sig.	Files without Signature 3
None signed	Files without Signature 1, Signature 2, or Signature 3
Signed	Files with Signature 1, Signature 2, or Signature 3
Signed All	Files with Signature 1, Signature 2, and Signature 3

When the search is performed in units of file links, file links whose last file meets the search conditions are detected.

Displaying Consecutive Data That Exceeds 32 Million Points

Universal Viewer cannot display consecutive data that exceeds 32 million points (e.g., a data file sampled at 1-second intervals over one year) in the same window.
If you open such data from the search results, the data is automatically divided according to the following conditions and displayed in multiple windows.

- The first division contains data from the first file up to the file that results in a number of points as close as possible to, but not exceeding, 32 million points. The number of data points in this calculation includes those of missing files and those during power-failure periods.
- In the first division, when the 32 millionth point falls on a power-failure period, the end of the file before the file containing this power-failure period will be the break point.
- In the second division, the file or the missing file following the first division will be used as the first file in the division. From this point, the above rule is applied repeatedly.

Note

- The divided pieces of data are displayed in order from the last piece.
- If there is not enough RAM on the PC, a portion of the data may not be displayed.

2.3 Linking Data Files

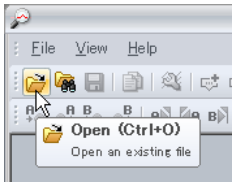
Files that have been divided by recorders' auto-save feature or due to power failures can be linked for display.
There are two ways to link files. One is to use the menu bar or toolbar. The other is to use the File Configuration dialog box.

2.3.1 Linking Files Using the Menu or Toolbar

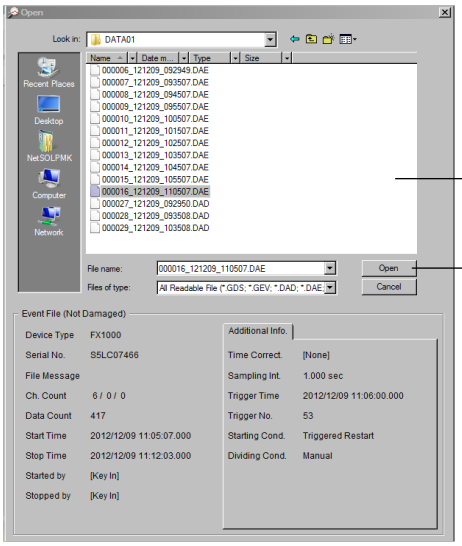
You can use menu commands or buttons on the toolbar to link data files.
Only the files in the same directory can be linked.

Procedure

1 On the **File** menu, click **Open**. Or, click **Open** on the toolbar.



The Open dialog box appears.



Select the first file.

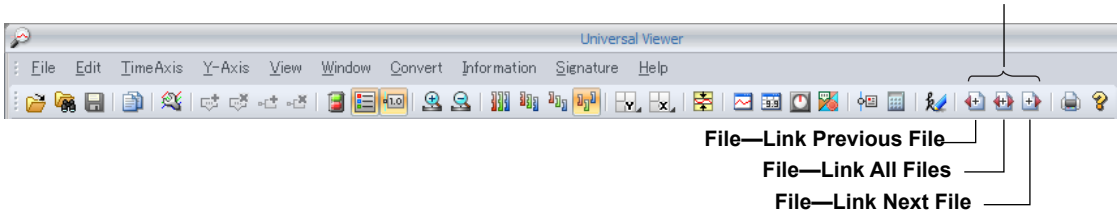
Click here.
The file will open.

2 In the dialog box, select the first data file that you want to link, and click **Open**.
Or, double-click the file.

The data appears in the window.

3 From the **File** menu, click **Link Previous File**, **Link Next File**, or **Link All Files**. Or, on the toolbar, click on one of the following buttons.

Click one of these buttons.



File—Link Previous File
File—Link All Files
File—Link Next File

The files will be linked together.

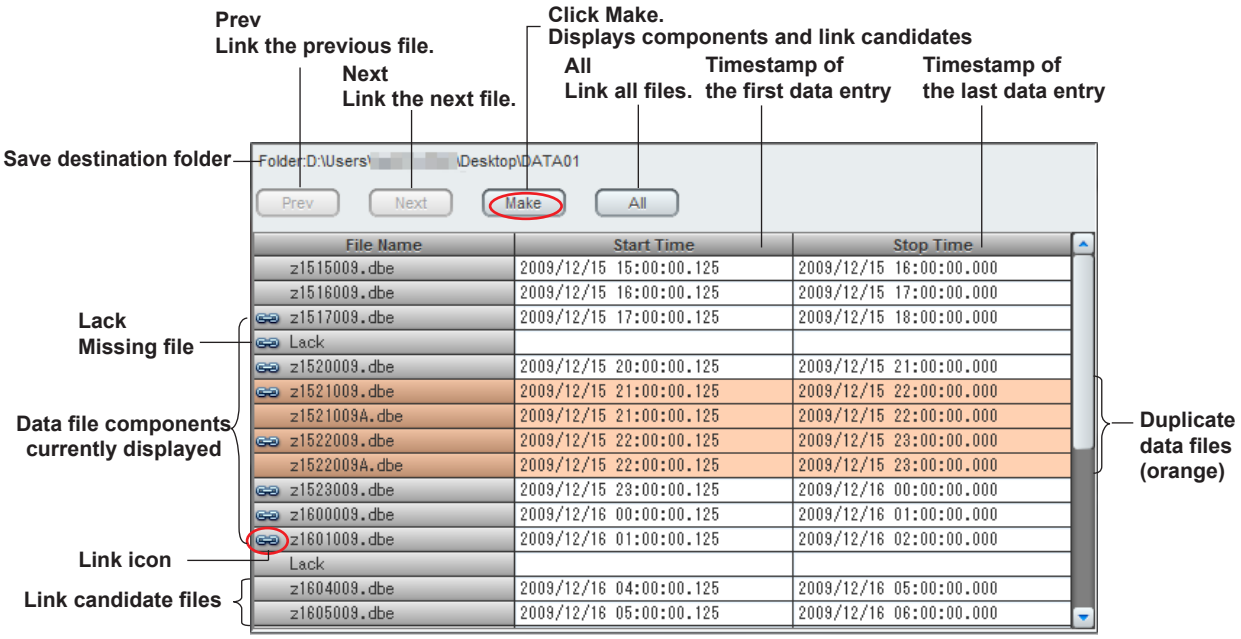
2.3.2 Linking Files from a Dialog Box

You can link data files using the File Configuration dialog box.
You can link previous and subsequent data files while looking at the status of the displayed data file.

Procedure

1 Open the first file that you want to link.
From the **Window** menu, click **File Configuration**.

The File Configuration dialog box appears.
Link icons are displayed next to the files that comprise the data file that is currently displayed.



2. Click **Make**.
The link candidate files is displayed.

3 Click **Prev**, **Next**, or **All** to link the appropriate files.

Prev: Links the previous file
Next: Links the next file
All: Links all files

The relevant files will be linked together.

Explanation

The File Configuration dialog box shows the folder containing active data files and the information of those files.

File Configuration

The background of the names of active data files is gray, and link icons are shown next to the names.

Duplicate Data Files

You can identify duplicate data files in the same folder (files with different names that contain the same data).
The background of the names of duplicate data files is orange.

Missing Data Files

You can identify which data files are missing from the set of data files that is currently displayed.
The names of missing data files are indicated as “Lack,” and the background is gray.
Information about how many files make up a missing section is not displayed.
Information about missing data files before and after the set of data files that is currently displayed is not displayed.

Candidate Data Files for Linking

Candidate data files that can be linked to the set of data files that is currently displayed are displayed. The background of the names of candidate data files is gray. Link icons are not displayed.
Candidate files are those that meet the following conditions.

- The data file is a component of a single recording data file that is also composed of the data files that are currently displayed.*
- There will be no missing data when the data file is linked.
- The recording data file is in the same folder as the data files that are currently displayed.

* A single recording data file is composed of data files that are created through one recording session (from recording start to recording stop).

Linking Data Files

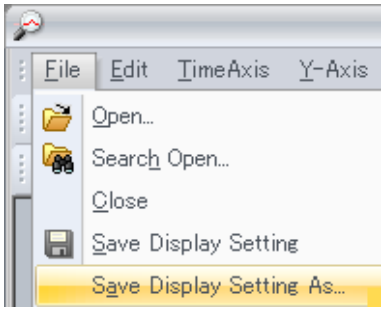
You can link data files by linking the previous file, linking the next file, or linking all files.
When you link the previous file, the file containing data before the active data is linked.
When you link the next file, the file containing data after the active data is linked. When you link all files, all candidate data files are linked.

2.3.3 Saving Link Information Files

You can save the link information of the linked data files that are currently shown.

Procedure

1. After linking data files in the File Configuration dialog box, from the **File** menu, click **Save Display Setting As**.



A Save As dialog box appears.

2. Click **Save**.
The link information file is saved in the same folder as the individual files.
The file name will be the original file name with the .ldx extension. You can also specify a different name to save the file.

Note

- Files with the .ldx extensions contain link information and display conditions. To open the linked data files, the original data files are necessary.
- If there are missing files in the middle of a batch data file, you cannot save the link information file.
- To save the link information file, use the Save Display Setting As command. Using Save Display Setting will not save the link information file (*.ldx).
- For details on saving display conditions, see section **4.1 Saving Display Conditions**.

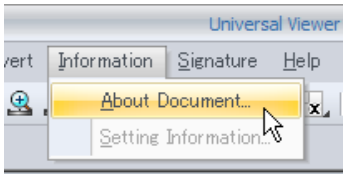
2.4 Viewing Data File Information

You can view information on active data files by selecting **About Document** from the **Information** menu. You can also specify the header information that is printed.
▶ Printing (**section 4.3**)

2.4.1 Viewing Information in the File Information dialog box

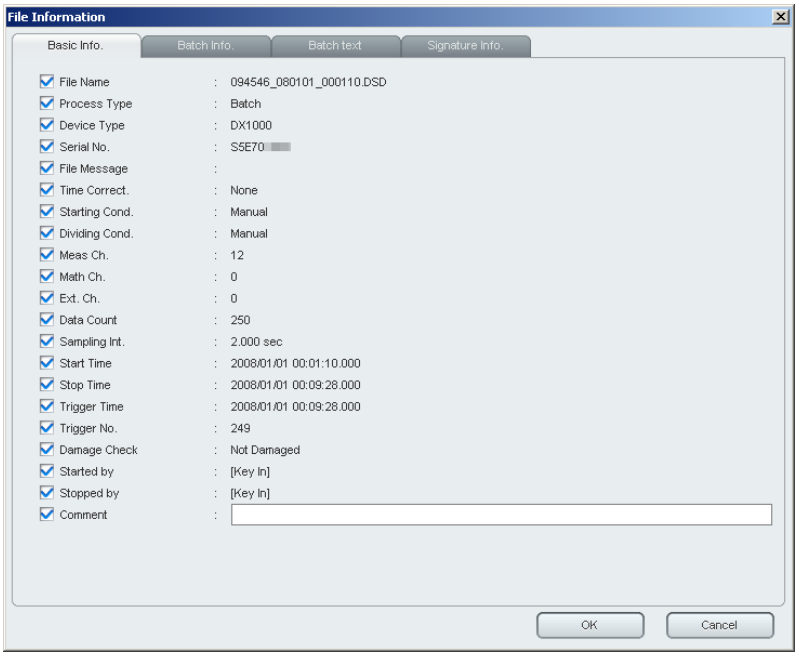
Procedure

1 On the **Information** menu, click **File Information**.



The Basic Information tabbed page of the File Information dialog box appears.

Display Data File or Event Data File



Explanation

The File Information dialog box consists of multiple tabbed pages.
The following tabbed pages appear only when there is information to be displayed.

- BatchInfo. tabbed page
- Batch text tabbed page
- Signature Info. tabbed page

On each tabbed page, items that do not have information to display are hidden, and subsequent items are shifted up.
On each tabbed page, items whose check boxes are selected will be used as headers in printouts.

Items on the Basic Information Tabbed Page

Item	Description
File Name	File name
Process Type	Process type during recording (batch, continuous)
Device Type	Model that sampled the data
Serial No.	Serial number of the instrument that sampled the data
File Message	File message that was added during recording
Time Correction	Whether the time was corrected during recording
Starting Cond.	Start conditions for recording (manual, restart after blackout, auto, triggered restart, over write, unknown)
Dividing Cond.	End conditions for recording (manual, black out, auto, triggered stop, running,[1] data count, interrupted, unknown)
Meas Ch.	Number of measurement channels on the instrument that sampled data
Math Ch.	Number of math channels on the instrument that sampled data
Ctrl Ch.	Number of control channels on the instrument that sampled data
Ext. Ch.	Number of extension channels on the instrument that sampled data
Comm Ch.	Number of communication channels on the instrument that sampled data
Data Count	Data count
Sample Int.	Sample interval (s)
Start Time	Start time of recording
Stop Time	Stop time of recording
Triggered Time	Time of trigger
Trigger No.	Trigger position of the last file in reference to the first data entry of the first file (if there are missing files in the middle of a batch file, the data entries in the missing sections are counted)
Damage Check	Data file status (normal, error)
Internal Data	Whether there is data that was saved through key operation (yes, no)
Calibration Corrected Ch.	Names of channels on which calibration correction was performed
Started by	User that started recording, or the staried condition
Stopped by	User that stopped recording, or the stopped condition
Comment	Comment for printouts (up to 128 characters)

Items on the Batch Info. Tabbed Page

Item	Description
Batch No.	Batch number
Lot No.	Lot number
Comment 1	The user who entered comment 1, the time when it was entered, and the content
Comment 2	The user who entered comment 2, the time when it was entered, and the content
Comment 3	The user who entered comment 3, the time when it was entered, and the content

Items on the Batch text Tabbed Page

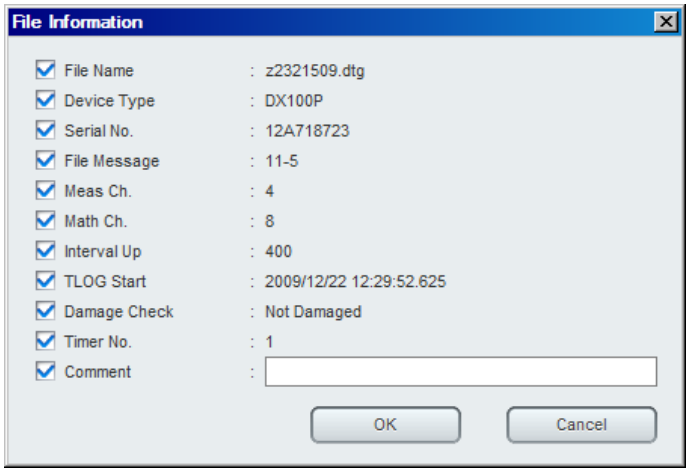
Item	Description
Title	Title string of the batch text
Description	String of the batch text description

Items on the Signature Info. Tabbed Page

Item	Description
Signature 1	The signing time of signature 1, user that signed, and signing result (no sig., pass, fail)
Signature1Comment	Comment at time of signature 1
Signature 2	The time of signature of signature 2, user that signed, and sign result (no sig., pass, fail)
Signature 2 Comment	Comment attached to the signature of signature 2
Signature 3	The time of signature of signature 3, user that signed, and sign result (no sig., pass, fail)
Signature 3 Comment	Comment attached to the signature of signature 3

TLOG File Information Dialog Box

If the data file is a TLOG file, the TLOG File Information dialog box appears.



The following items are displayed. Use the check boxes in front of the items to specify the items you want to print.

Item	Description
File Name	File name
Device Type	Model that sampled the data
Serial No.	Serial number of the instrument that sampled the data
File Message	File message that was added during memory sampling
Meas Ch.	Measurement channels on the instrument that sampled data
Math Ch.	Math channels on the instrument that sampled data
Interval Up	Data sampling count of the data file
TLOG Start	Start time of memory sampling
Damage Check	Data file status (normal, error)
Timer No.	Timer numbers displayed on active tabbed pages on the TLOG file display window
Comment	Comment for printouts (up to 128 characters)

Blank

3.1 Displaying Waveforms

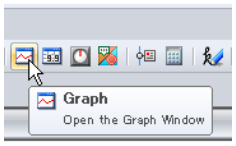
You can display data sampled on different channels of a recorder as waveforms on graphs that display time on the horizontal axis and values on the vertical axis (Y-axis).

3.1.1 Waveform Display Window

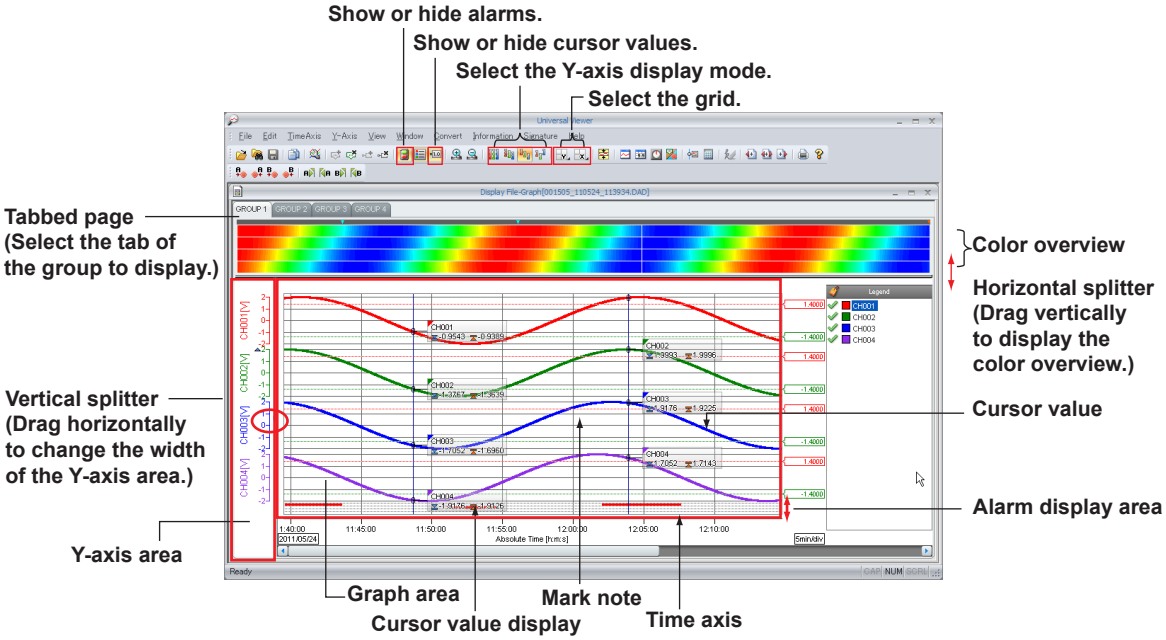
When you open a display data file and an event data file, the data is first displayed as waveforms. To open a window that you closed before, follow the procedure below.

Procedure

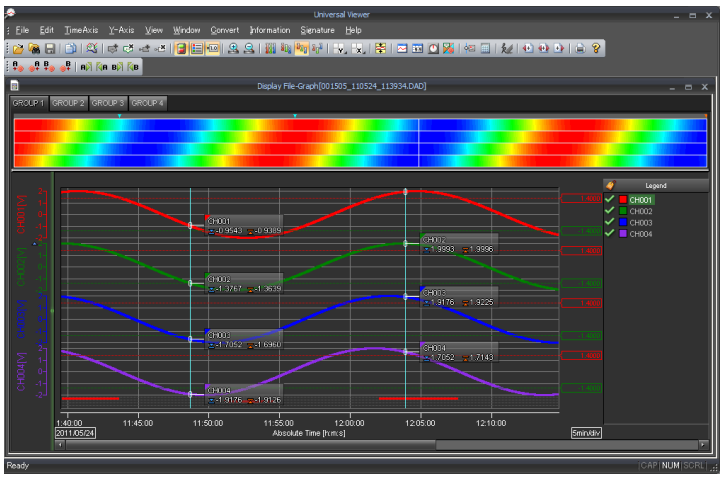
1 To open the waveform display window, on the **Window** menu, click **Graph**. Or, click the **Graph** button.



Waveforms will appear.

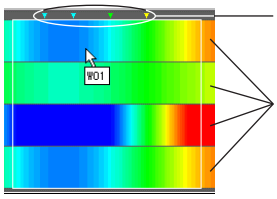

Show or hide alarms.
Show or hide cursor values.
Select the Y-axis display mode.
Select the grid.
Tabbed page (Select the tab of the group to display.)
Color overview
Horizontal splitter (Drag vertically to display the color overview.)
Vertical splitter (Drag horizontally to change the width of the Y-axis area.)
Cursor value
Alarm display area
Y-axis area
Graph area
Cursor value display
Mark note
Time axis

Waveform display example (light style)



Waveform display example (dark style)

Color Overview Display



The color overview display shows the measured values of the entire data source using different colors. Values between the minimum and maximum values of the scale are mapped to 50 different colors, and measured values are displayed using these colors.
For display data, the maximum and minimum values are displayed, respectively, in the top row and bottom row in the space allotted for the waveform. For event data, instantaneous data is displayed in a single row.
If you move the cursor over a color bar, the waveform number will appear. If you click or drag the color bar, the corresponding section of the waveform appears in the waveform display area.

Note

By default, the color overview is hidden.
To show it, drag the horizontal splitter at the top of the tabbed page down.

3.1.2 Setting Display Group Details

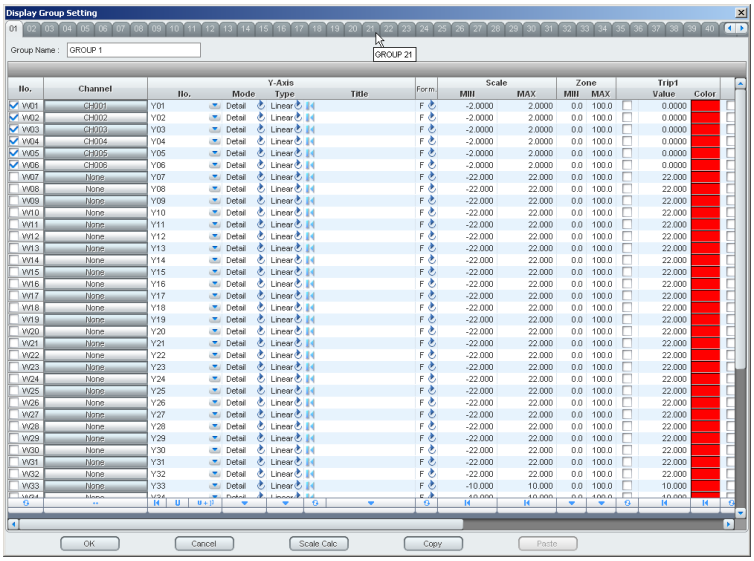
To assign channel data to waveforms, use the Display Group Setting dialog box. This dialog box enables you to set channel groups and how to display the window.*

* The items that you set in this dialog box apply to the tabbed pages of the waveform display, digital display, and circular display. They also apply to the data display of the respective windows. For details on the display locations that these settings apply to, see the note on page 3-8.

Procedure

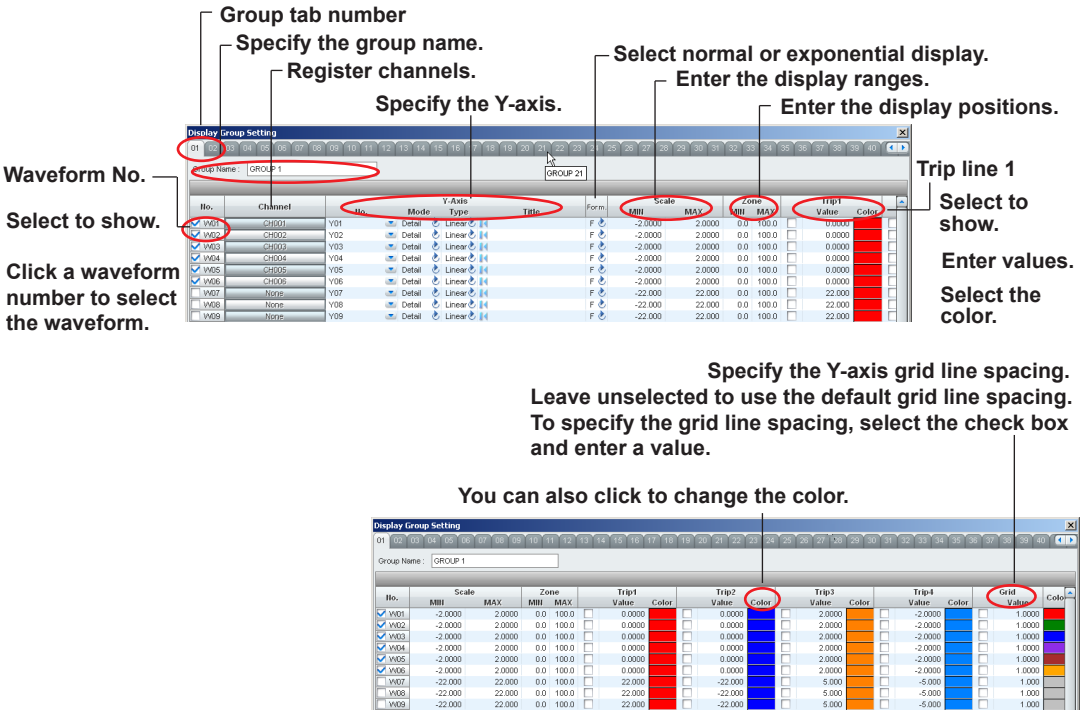
1 To configure display group settings, on the **View** menu, click **Display Group Setting**. Or, click the **Display Group Setting** button.

The Display Group Setting dialog box appears.



2 Click the tab of the group you want to configure.

3 Edit the setup data as necessary. (For details on each setting, see the explanation.)


Group tab number
Specify the group name.
Register channels.
Specify the Y-axis.
Select normal or exponential display.
Enter the display ranges.
Enter the display positions.
Waveform No.
Select to show.
Click a waveform number to select the waveform.
Trip line 1
Select to show.
Enter values.
Select the color.
Specify the Y-axis grid line spacing.
Leave unselected to use the default grid line spacing.
To specify the grid line spacing, select the check box and enter a value.
You can also click to change the color.

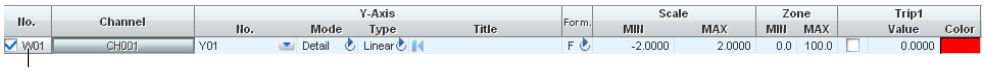
4 Click **OK** at the bottom of the dialog box to apply the settings to the display.

Note

The setup data that first appears in the dialog box are those that were used on the recorder when the data was sampled. If you want to apply the setup data that you edited the next time you open the data file, be sure to save the setup when you close the file.

Explanation

The Display Group Setting dialog box consists of multiple tabbed pages.
The spreadsheet on each tabbed page shows the settings of each waveform in rows and the setup items in columns.



Waveform number

In this dialog box, you can edit the setup data in the following ways.

- Set each setup item individually.
- Specify a range of items and set them at once
- Copy setup data between waveforms

To set multiple items at once or to copy setup data, you must use the action bar of the dialog box. For these procedures, see the later half of this section.

This section explains how to set each setup item individually.

Changing the Active Display Group

When you open a data file, you can set which group to display in front. Click the group tab No. that you want to display in front, and click **OK**.

Assigning Display Group Names

Enter the display group name in the **Group Name** box, and click **OK**.
The name is applied to the title of the display group tab of the window.

For each waveform, you can set the items shown in the following table.

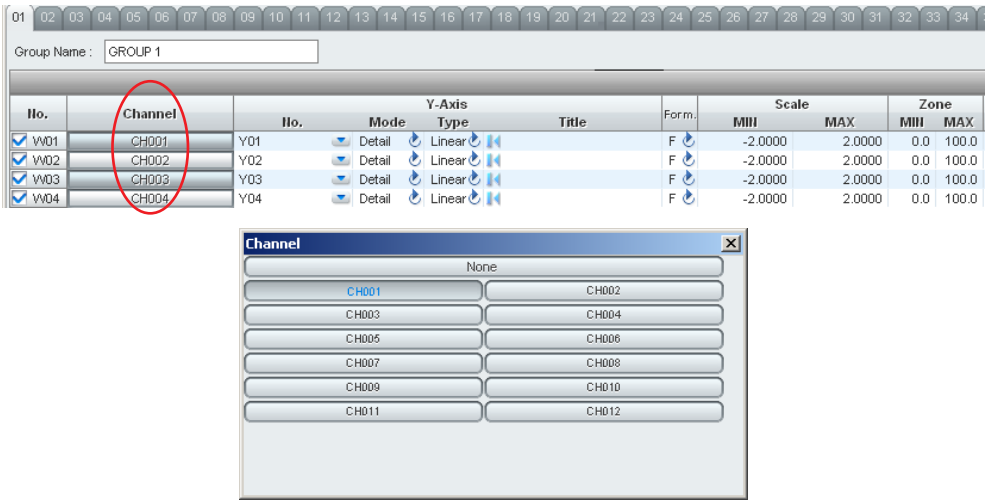
Item	Description
No.	Show or hide each waveform
Channel	Channel to assign to the waveform
Y-axis No.	Y-axis to share between waveforms
Y-axis mode	Display mode (detail, compact)
Y-axis type	Scale display (linear, logarithmic)
Y-axis title	Title
Display	Display format for Y-axis scale values and data (normal, exponential)
Scale minimum	Minimum value on the Y-axis scale
Scale maximum	Maximum value on the Y-axis scale
Zone minimum	Lower limit position for Y-axis display
Zone maximum	Upper limit position for Y-axis display
Trip 1 to 4 usage	Whether to use trip 1
Trip 1 to 4 values	Trip 1 value
Trip 1 to 4 colors	Trip 1 color
Grid line spacing usage	Whether to set the grid line spacing
Grid line spacing	Value to use for grid line spacing
Colors	Waveform display color

Turning Waveform Displays On and Off

To display a waveform, select the waveform number check box. To hide it, clear the check box. Click OK to apply the setting to the d”splay window.

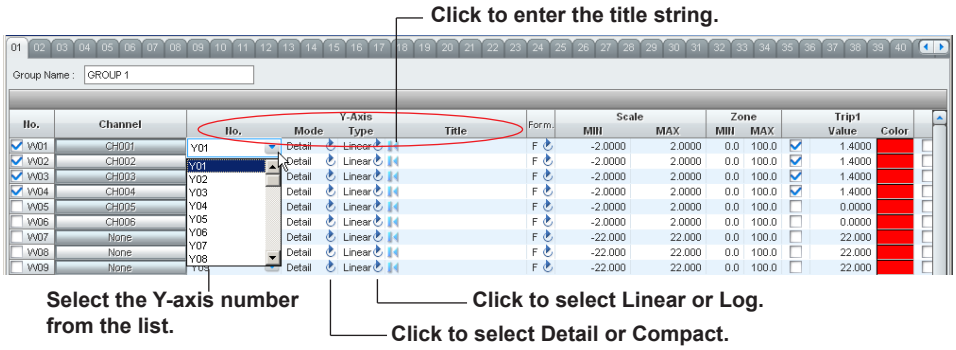
Registering Channels

You can assign channels to waveforms.
Click the channel cell of a waveform that you want to edit. The Channel dialog box opens.



Select the channel to assign to the waveform. The result is applied ”o the Display Group Setting dialog box. To not assign a channel, select **None**.

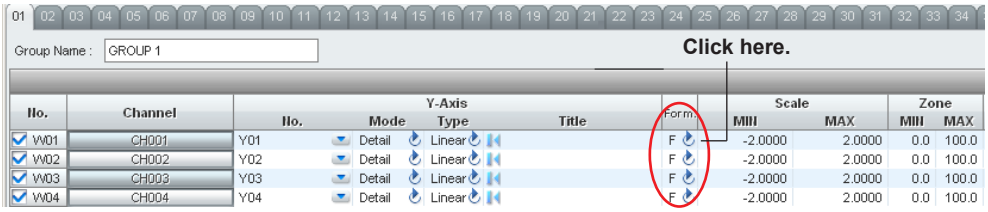
Specifying the Y-Axis (No., display mode, type, and title)


Click to enter the title string.
Select the Y-axis number from the list.
Click to select Linear or Log.
Click to select Detail or Compact.

- No.
  You can specify the Y-axis to share between waveforms.
  If a Y-axis was shared among multiple waveforms, consistency in their reference will be checked.
  For example, if waveform A is using the Y-axis of waveform B, and waveform B uses the Y-axis of C, waveform A is changed automatically to use the Y-axis of C.
- Mode
  Set the Y-axis display to **Detail** or **Compact**. In Compact mode, scale values are not displayed.

- Type
  Set the type of scale to assign to the Y-axis to **Linear** or **Log**.
- Title
  Enter a title of your choosing. Up to 30 characters can be displayed. If you do not specify the title, the channel number, tag number, or tag comment assigned to the waveform is used as its default title.

Specifying the Value Display Format



Click the appropriate icon in the Form. column to select F (normal) or E (exponential).
The scale and trip values in the same line will be displayed in the specified format.
In exponential display, the grid line spacing value is invalid.
When you click the OK button, the values displayed in the window (Y-axis scale, cursor value, and trip value) will be changed to the specified display format.

Specifying the Display Range (Scale)

Click the scale value display area to enter values.
The input range and decimal place are as follows.

- Minimum and maximum values
  When the Y-axis scale is linear: -1E16 to 1E16.
  When the Y-axis scale is log: 1E-16 to 1E16.
- Decimal place of values
  When the Y-axis value display is F (normal): Decimal place that was used when the data was sampled
  When the Y-axis value display is E (exponential): Fixed to 4 digits

Specifying the Display Position (Zone)

You can set the waveform display position by setting the upper and lower boundaries as percentages of the waveform display area. The lower edge of the waveform display area is 0%, and the upper edge is 100%. Click the zone display area to enter values.
The input ranges are as follows:

- Lower boundary: 0 to 99%
- Upper boundary: 1 to 100%
- Decimal place: Fixed at 1

Trip 1 to 4

You can set up to four trip lines for each waveform. Only the trip lines of the active waveform are displayed on the waveform display screen. Select the check boxes for the trip lines you want to display. Click the value display area to enter values. You can also specify colors.
In the waveform display window, you can drag trip lines to change their positions.

Specifying the Y-Axis Grid Line Spacing

You can display Y-axis grid lines at the specified spacing.
Select the grid line spacing check box. (If unselected, the default grid line spacing will be used.) Click the value display area to enter values. Click **OK** to display the Y-axis grid lines at the specified spacing.

Note

When you specify the Y-axis grid line spacing in the Display Group Setting dialog box, the Y-axis grid setting on the menu and toolbar will be voided.

Specifying Waveform Colors

You can assign colors to waveforms. To assign a color, click the appropriate color cell to display the Color Setting dialog box. Select from the basic colors available. To assign a custom color, click Define Custom Colors in the dialog box. The procedure is the same as that for the standard Windows color setting dialog box.

Note

The items in the tabbed pages of the Display Group Setting dialog box apply to the tabbed pages of the waveform display, digital display, and circular display. The table below shows the setup operations that affect and the results that are applied to these tabbed pages. When each operation is performed, the displays marked as “Yes” are affected.

Setup Operation	Displays Affected by the Operation			
	Waveform Display	Circular Display	Digital Display	Cursor Value Display
Change the active display group	Yes	Yes	Yes	Yes
Edit the display group name (tab title name)	Yes	Yes	Yes	Yes
Turn waveform displays on and off	Yes	Yes	Yes	Yes
Register channels (assign channels to waveforms)	Yes	Yes	Yes	Yes
Specify the Y-axis to share between waveforms	Yes	Yes		
Set the Y-axis display mode (detail or compact)	Yes	Yes		
Set the Y-axis scale type (linear or logarithmic)	Yes	Yes		
Edit the Y-axis title	Yes	Yes		
Set the display format of waveform values (normal or exponential)	Yes	Yes	Yes	Yes
Set the Y-axis scale range	Yes	Yes		
Specify the Y-axis display position (zone)	Yes	Yes		
Display trip lines	Yes	Yes		
Specify the Y-Axis grid line spacing	Yes	Yes		
Specify waveform colors	Yes	Yes	Yes	Yes

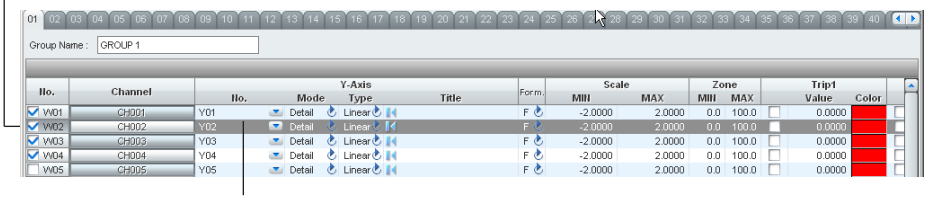
Collectively Edit Setup Data

You can select a range of setup data of several waveforms and use the action bar to collectively edit the data. In the example below, W02 to W04 will be set to the same Y-axis at once.

Procedure

1 Click the line (waveform number) that you want to select.
The position that you clicked will be the starting line.

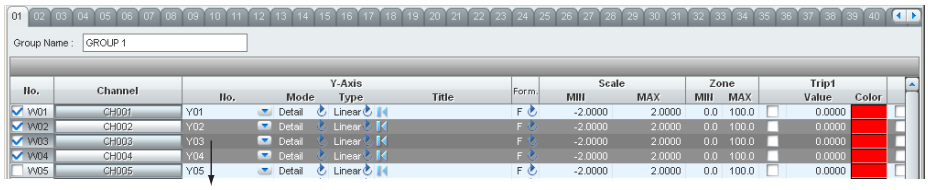
Click the data number that you want to select.



The line will be selected.

In this example, the W02 line is selected.

2 Drag the cursor to W04, and release the mouse button.



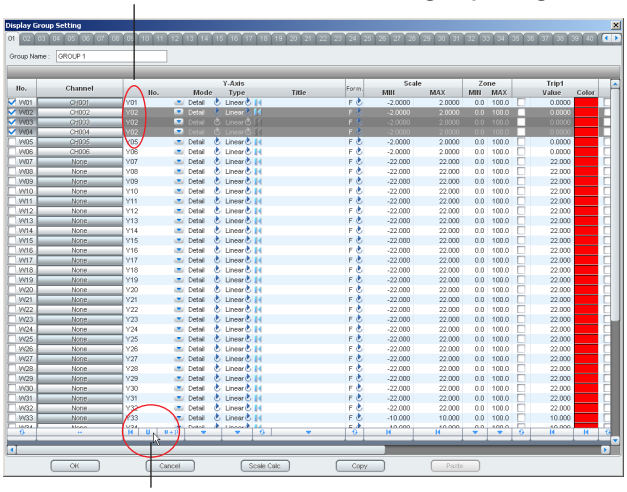
Drag

The lines up to the point where you release the mouse button will be selected.

W02 to W04 are selected.

3 On the action bar, click **Grouping** .

Y-axes whose unit is the same are grouped together.



Click the button on the action bar.

W02 to W04 are set to the same Y-axis, namely Y2.

Explanation

To collectively edit setup data, you must select the target setup data and then click a button on the action bar, which is at the bottom of the window. The result varies depending on the type of button you press on the action bar.

Button Type	Result
	Switch the check box state between selected and unselected
	Assign consecutive channel numbers by taking the first waveform in the selected range to be the reference
	Reset the value to default
	Group channels that have the same unit and assign the same Y-axis within each group
	Group channels that have the same unit and scale and assign the same Y-axis within each group
	Copy the value of the first waveform in the selected range to the other waveforms

In addition to dragging the cursor to select the setup data of multiple waveforms (step 2 in the procedure), the following methods are available.

- Using the Shift key
  After selecting the starting line, hold down the Shift key, and click the ending line.
- Selecting All Lines
  Click No. (the title) to select all setup data.

Copying Data between Waveforms

You can copy setup data by using the Copy and Paste buttons at the bottom of the window. Select a range of setup data to copy, and click **Copy**. Select a range of setup data to paste to, and click **Paste** to paste the copied contents.
When you copy, if a Y-axis number does not exist in the options of a paste destination, the Y-axis number specific to the waveform at the paste destination will be used.

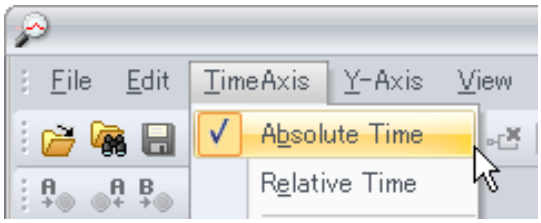
Automatically Calculating Scale Values

The software can automatically calculate the display range values for multiple data sources. To do so, select the range of setup data that you want to edit, and click **Scale Calc** at the bottom of the window.
The scale values will be set to the maximum and minimum values in the measured data of the channel assigned to each waveform.

3.1.3 Setting the Time Axis

Selecting Absolute or Relative Time Display

You can switch the time axis display between absolute time and relative time.
To switch, use the Time menu.



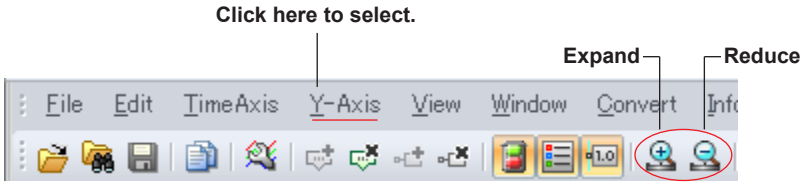
- Absolute Time — Displays the date and displays the time axis using data timestamps (e.g., h:m:s: 18:26:59).
- Relative Time — Displays the time axis using times in reference to the first data entry (e.g., DAY h:m:s: 00:00:53).

All Display

If you select **All** from the **Time** menu, the time axis is expanded or reduced so that all the data is displayed.

Zooming in on or out of the Time Axis

You can zoom in on or out of the area around the cursor.
If there is no cursor, zooming is performed in reference to the left edge of the displayed waveform.
Use the **Time** menu, or click the corresponding buttons on the toolbar.



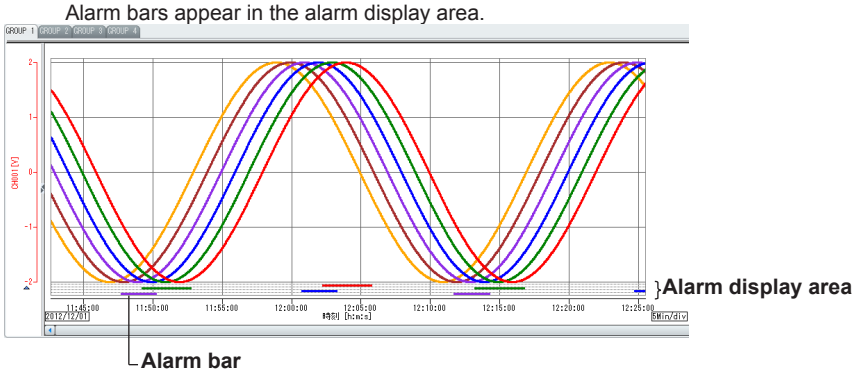
3.1.4 Displaying and Searching for Alarms

Turning the Alarm Display On and Off

Procedure

1 On the **View** menu, click **Alarm**. Or, click the corresponding button on the toolbar.

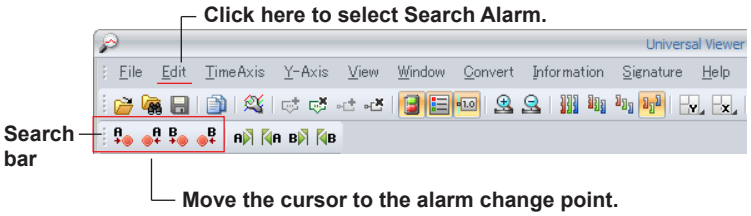
Alarm bars appear in the alarm display area.



Alarm bars are displayed in order from the top: alarm 1, alarm 2, alarm 3, and alarm 4. When alarm bars overlap, alarm bars are displayed from the front with the following precedence: the active waveform, waveforms with the same Y-axis as the active waveform, and waveforms in the same display group with smaller waveform numbers.

Searching Alarms

You can search for alarms and move the cursor to the found positions.
On the **Edit** menu, click **Search Alarm**. Or, click the corresponding button on the toolbar.
The cursor moves in accordance with the selected command.

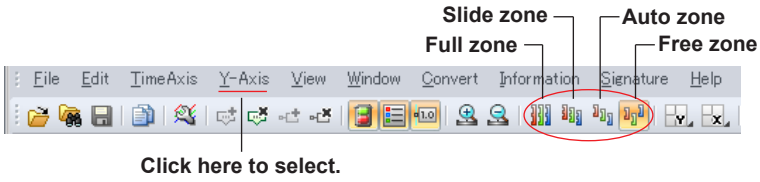


A list of alarm information can be viewed on the Alarm To tabbed page.
For details on the Alarm To tabbed page, see **section 3.4**.

3.1.5 Setting the Y-Axis

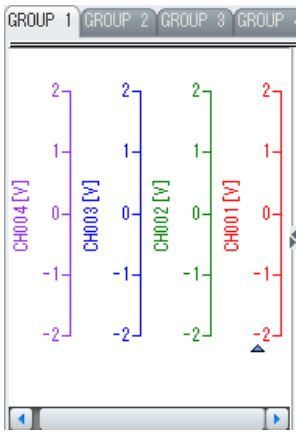
Switching Waveform Display Zones

Use the **Y-Axis** menu, or click the corresponding buttons on the toolbar.

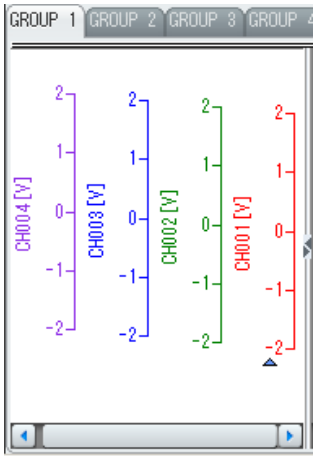


- Full Zone: Displays all waveforms over a full zone
- Slide Zone: Displays each waveform cascaded from the top to the bottom of the waveform display area

Full zone

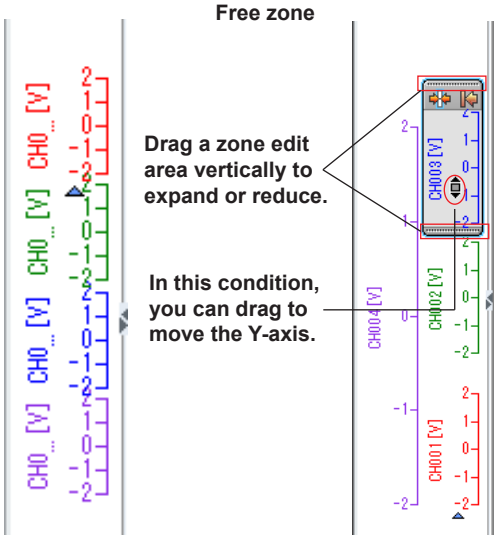


Slide zone

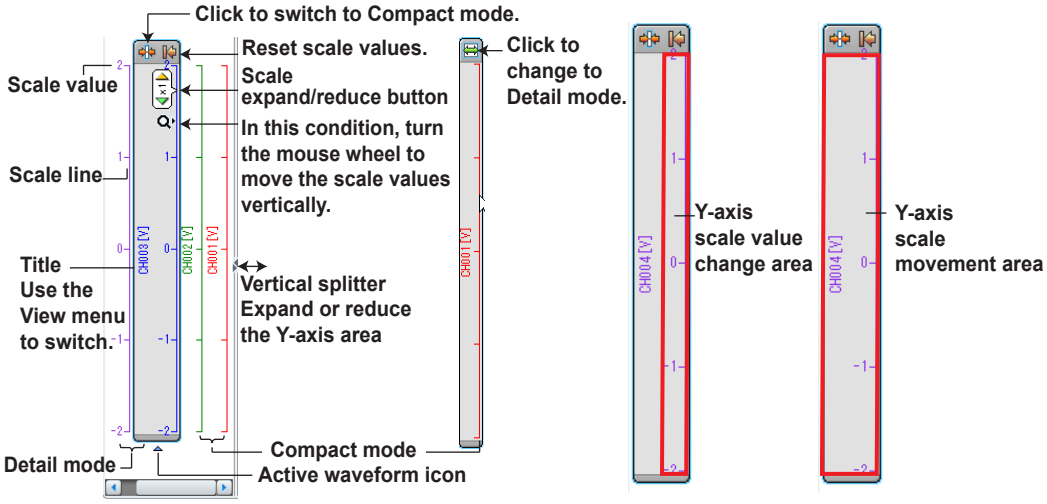


- Auto Zone: Divides the waveform display area into equally spaced zones in accordance with the number of displayed waveforms and displays the waveforms
- Free Zone: Displays waveforms in user-specified zones
  You can change the size of zones in Free Zone mode by manually adjusting the Y-axis in the window.
  Drag a zone edit area (the top or bottom boundary of a zone) to expand or reduce its Y-axis. Place the cursor over a zone so that its shape changes and drag to move the Y-axis to the desired position. You can move Y-axes only in Free Zone mode.

Auto zone **Free zone**


Drag a zone edit area vertically to expand or reduce.
In this condition, you can drag to move the Y-axis.
CH003 [V]
CH002 [V]
CH004 [V]
CH001 [V]

When you move the cursor into the Y-axis area, the Y-axis becomes editable, as shown in the figure below.



Compact Mode and Detail Mode

There are two Y-axis styles: compact mode and detail mode. You can switch between the two by clicking the icon at the top of the Y-axis area. In compact mode, scale values are hidden, narrowing the width of the Y-axis.

Expanding and Reducing a Y-Axis Scale

When you move the cursor into the scale value edit area, the cursor changes as shown in the figure.
Clicking in this condition shows a scale expand/reduce button.
Click an arrow or spin the mouse wheel to expand or reduce the scale.

Scrolling a Y-axis Scale

When you move the cursor into the scale edit area, the cursor changes as shown in the figure.
Spinning the mouse wheel in this condition causes the Y-axis scale to scroll, maintaining the difference between the upper and lower limits of the scale.
The scale values will take on the values at the new position.

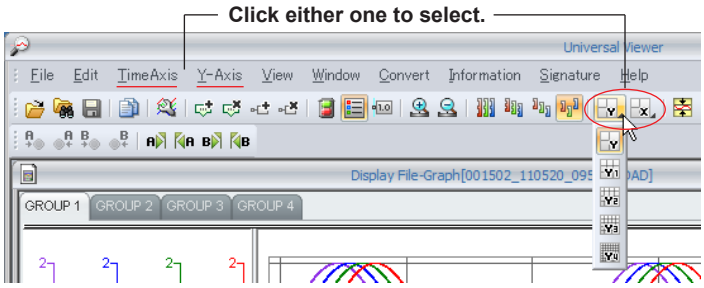
Changing the Active Y-Axis

In the Y-axis area, click a Y-axis to activate it.
The active waveform icon moves below the new active Y-axis.
When a Y-axis is shared among multiple waveforms, the waveform with the smallest number in the display group will become the active waveform.

Switching Y-Axis Titles

On the **View** menu, click **Channel**, **Tag No.**, or **Tag Comment** to change the type of character string used for Y-axis titles.

Changing the Grid Display (Y-axis and time axis)


Click either one to select.
File Edit TimeAxis Y-Axis View Window Convert Information Signature Help
GROUP 1 GROUP 2 GROUP 3 GROUP 4

Select a density from the **Y-Axis** menu, or click the corresponding button on the toolbar. To change the density of the grid lines on the time axis (X-axis), select a density from the **Time** menu, or click the corresponding button on the toolbar. You can select the grid line density from five levels.

Note

In the following situations, only the grid lines that correspond to the scale lines on the Y-axis are displayed.

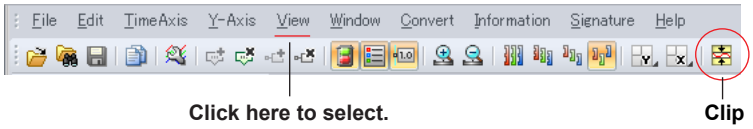
- If you specified the grid line spacing in the Display Group Setting dialog box
- When the Y-axis scale is set to exponential display

In addition, how the Y-axis grid is displayed varies depending on the Y-axis zone mode as follows:

- In Full Zone or Slide Zone mode, the grid lines for the Y-axis of the active waveform are displayed.
- In Auto Zone mode, the grid lines for all the displayed Y-axes are displayed.
- In Free Zone mode, the grid lines for the Y-axis of the active waveform are displayed. If there are other Y-axes above or below, the grid lines for those axes are also displayed.

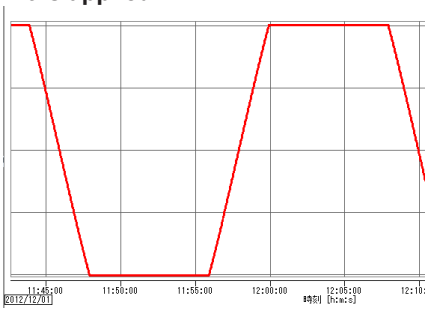
Waveform Display Limit (Clip)

On the **Y-Axis** menu, click **Clip**. Or, click the corresponding button on the toolbar.

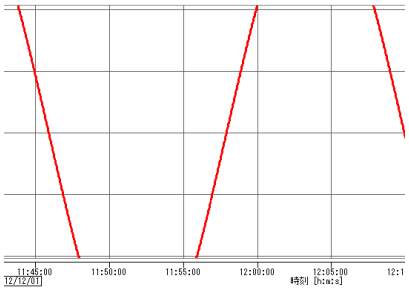


When you apply the waveform display limit, the Y-axis display range is limited to the minimum and maximum values that you specified using Scale in Display Group Setting. Measured values that are less than the minimum value of the scale are set to the minimum value, and values that are greater than the maximum value are set to the maximum value.

Example when display limit is applied



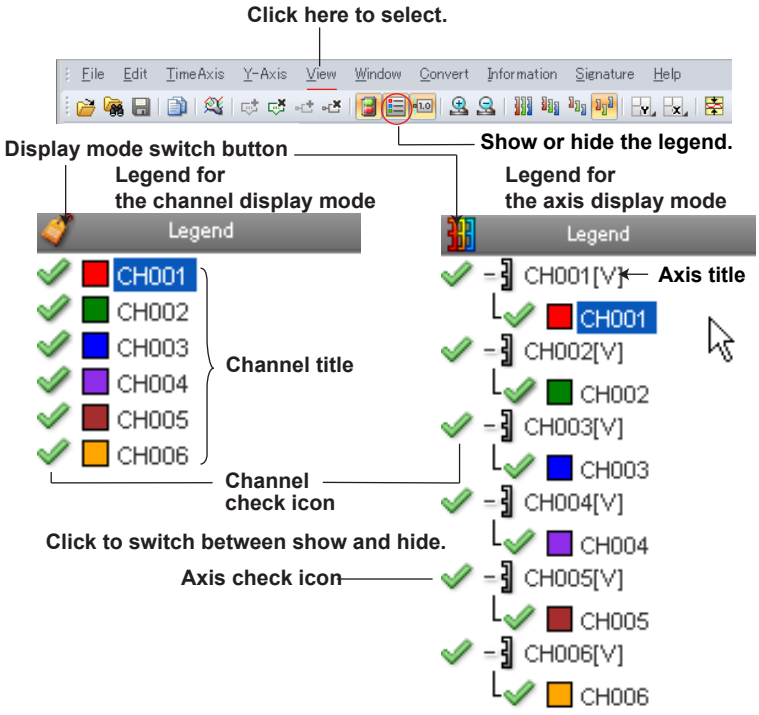
Example when display limit is not applied



3.1.6 Operations That You Can Perform from the Legend

Switching the Legend Display

To hide or show the legend, use the **View** menu, or click the corresponding button on the toolbar. The legend has two display modes: channel and axis. You can switch between the two by using the button in the top left of the legend.



Channel Mode

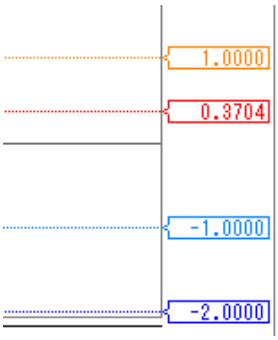
Only the waveforms that are assigned to channels in the active display group are displayed. Click a green check icon to hide the corresponding waveform data. If the Y-axis is not shared with other waveform data, it will also be hidden. Click a light-green check icon (hidden state) to show the corresponding waveform data.

Axis Mode

Only the waveforms that are assigned to channels in the active display group are displayed. Waveforms are displayed in groups that use the same Y-axes. Click an axis check icon to hide all waveform data that share the axis.

3.1.7 Moving Trip Lines

You can drag trip lines to change their positions.
Clicking a trip line value changes the color of the frame and the characters to black. You can drag in this condition to move the trip line to the desired position. The trip line value will take on the value at the new position.

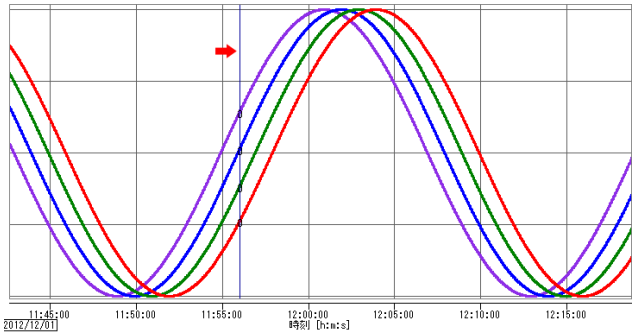


3.1.8 Setting Cursors

Specifying Cursors

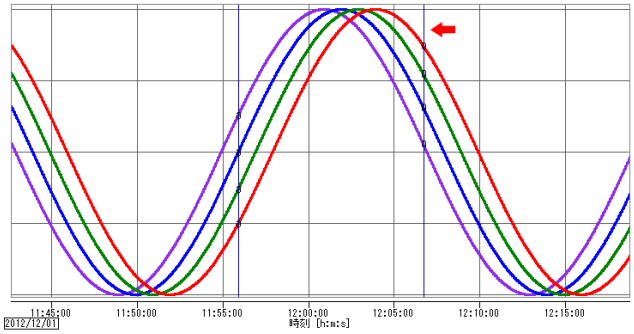
Procedure

1. Click a location in the graph area.



Cursor A appears.

2. Drag the cursor and release the mouse button.



Cursor B appears at the released position. The cursor positions will be set to the closest data positions.

Note

To position Cursor B outside the displayed data range, drag the cursor outside the graph area on the left or right. The displayed data will scroll toward the cursor.

Selecting All Data Points

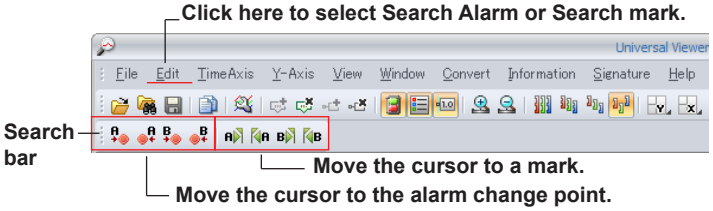
On the **Edit** menu, click **Select All**. Cursor A will move to the beginning of the data, and cursor B to the end.

Clearing Cursors

On the **Edit** menu, click **Erase Cursor**.

Moving Cursors by Searching

You can search for alarm transition points or mark positions and move the cursors to the found positions.
On the **Edit** menu, click **Search Alarm** or **Search Mark**, and select the position. Or, click the corresponding button on the toolbar.

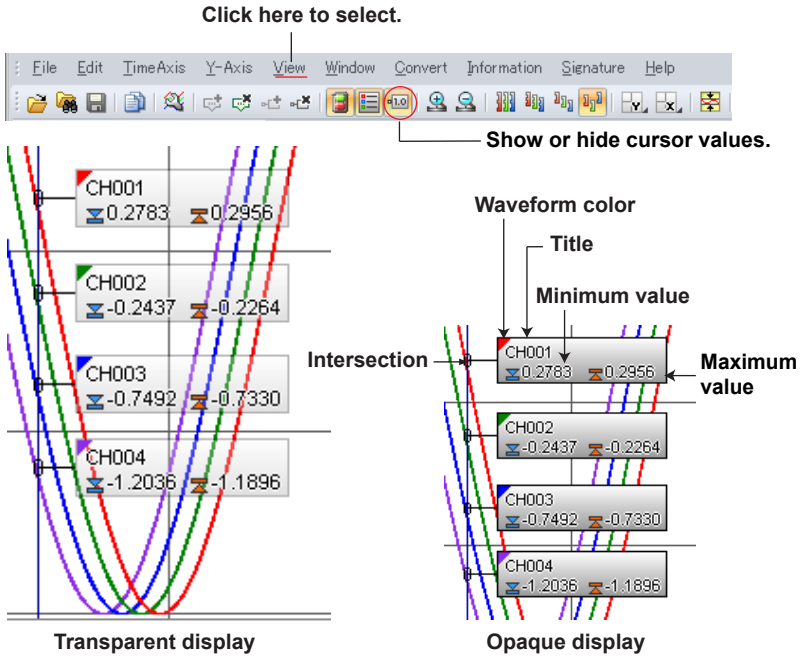

Click here to select Search Alarm or Search mark.
Universal Viewer
File Edit TimeAxis Y-Axis View Window Convert Information Signature Help
Search bar
Move the cursor to a mark.
Move the cursor to the alarm change point.

▶ Searching for alarms and marks (**"3.4 Displaying a List of Alarms and Marks"**)

Showing and Hiding Cursor Values in the Graph Area

Procedure

1 On the **View** menu, click **Cursor Value**. Or, click the corresponding button on the toolbar.



Cursor values will appear.
Remove the check mark to hide them.

2 On the **View** menu, click **Cursor Transparency** to select the transparency to use.

Explanation

- Cursor values are usually displayed to the right of the intersection between a cursor and a waveform.
  If they cannot be displayed to the right or they overlap the cursor on the right, they are displayed to the left of the intersection. If they cannot be displayed to the left either, they are not displayed.
- If a cursor is at a skip, error, undetermined, or power-failure data position, values are not displayed.
- If the cursor values of multiple channels overlap with each other, the values of only the front-most cursor are displayed. Cursor values are displayed with the following precedence: the active waveform, waveforms with the same Y-axis as the active waveform, and waveforms with small waveform numbers.
- If the data file is an event data file, instantaneous values are displayed.

Note

If you set, clear, or reset cursors or markers in the waveform display window, the result of the operation is reflected in the circular and digital display windows.

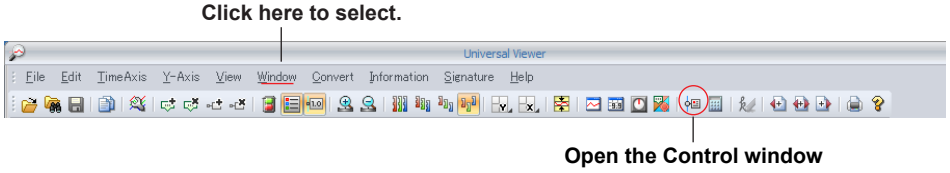
3.1.9 Displaying Cursor Values and Statistics

Control

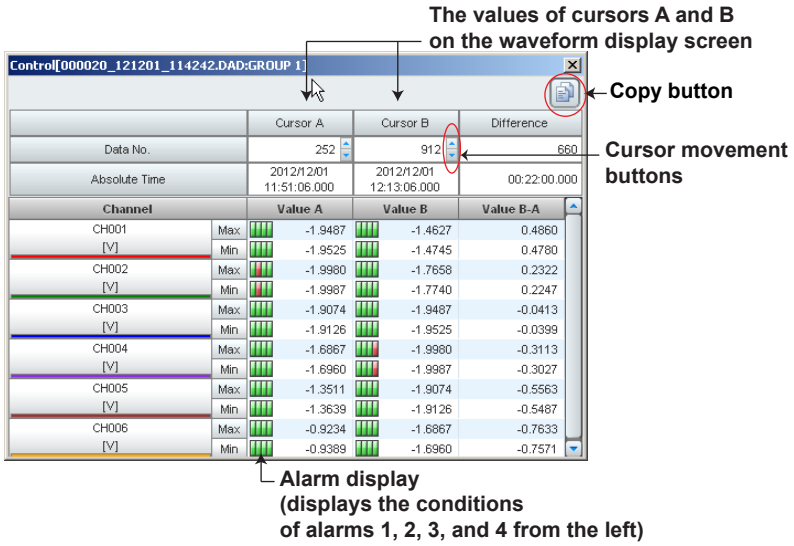
The Control dialog box shows values at cursor positions and value differences between cursors. You can also move cursor positions, show alarm information, and copy data to the clipboard.

Procedure

1 On the **Window** menu, click **Control**. Or, click the corresponding button on the toolbar.


Click here to select.
Universal Viewer
File Edit TimeAxis Y-Axis View Window Convert Information Signature Help
Open the Control window

The Control dialog box appears.



Explanation

The Control dialog box lists the waveform display window's cursor A and B values and their differences. Clicking a cursor movement button changes the cursor A and B position values and the cursor positions.
When the alarm display is on, alarm conditions are displayed. Alarms that are activated are displayed in red, and those that are not are displayed in green.
Clicking the Copy button copies the contents of the Control dialog box to the clipboard. You can paste the contents to a tab separated text file or to an Excel spreadsheet.

Digital Value Display of Error Data

Error data is displayed in the following manner.

Display	Description
+OVER	Measured or math data is over the positive limit.
-OVER	Measured or math data is below the negative limit.
SKIP	Skip data
LACK	Calculation error or missing data
INVALID	Invalid data
BURNOUT	Burnout data
ILLEGAL	Illegal data
Nothing	Data during a power-failure period

Note

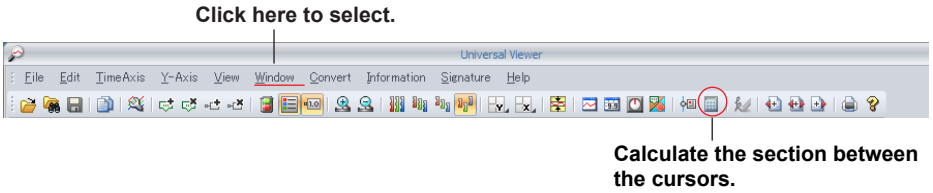
If no cursors are displayed in the waveform display window, the Cursor Value area will be blank. Differences between cursors will be indicated as "INVALID."

Statistics

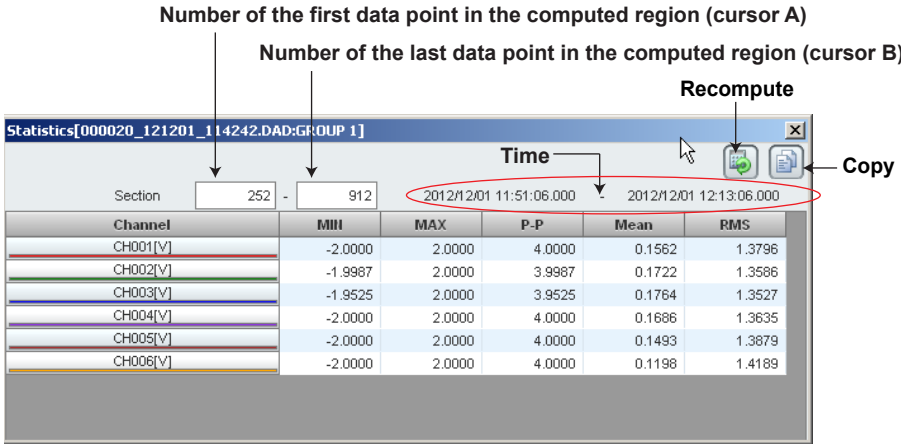
The Statistics dialog box shows calculated results for values between the cursors.
You can move cursor positions, update calculation results, and copy data to the clipboard.

Procedure

1 On the **Window** menu, click **Statistics**. Or, click the corresponding button on the toolbar.


Click here to select.
Universal Viewer
File Edit TimeAxis Y-Axis View Window Convert Information Signature Help
Calculate the section between the cursors.

The Statistics dialog box appears.



Explanation

The minimum, maximum, P-P, mean, and rms values for each waveform in the range specified by cursors A and B are calculated and displayed.
Clicking the Copy button copies the contents of the Statistics dialog box to the clipboard. You can paste the contents to a tab separated text file or to an Excel spreadsheet.

Note

Calculated results are not synchronized to the cursor positions or waveform group. If you change the cursor A or B position or the display group, click **Re-calc.** to update the calculated results.

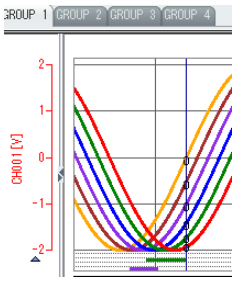
3.1.10 Adding, Editing, and Deleting Marks

Adding a Mark

You can add a mark when cursors A and B are at the same position.

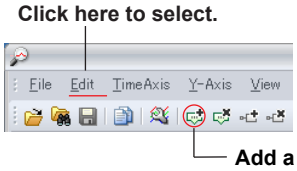
Procedure

1 Click the position where you want to add a mark.



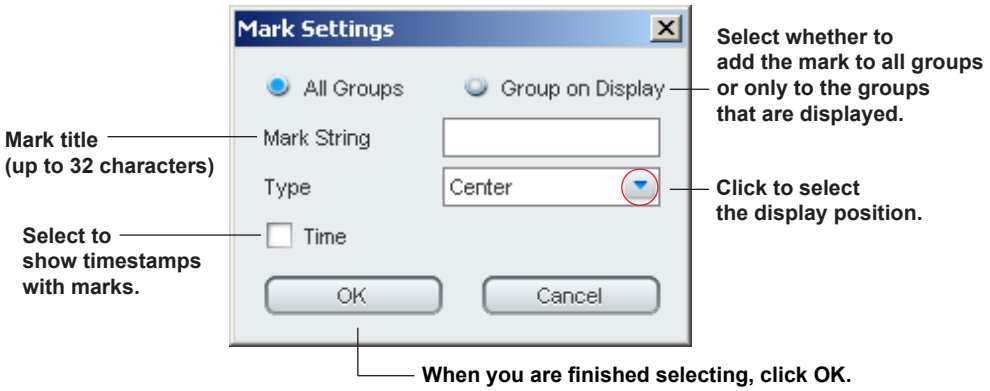
Cursor A appears.

2 On the **Edit** menu, click **Append Mark**. Or, click the corresponding button on the toolbar.



The Mark Settings box appears.

3 Edit the mark information.


Mark Settings
All Groups
Group on Display
Mark String
Type
Center
Time
OK
Cancel
Mark title (up to 32 characters)
Select to show timestamps with marks.
Select whether to add the mark to all groups or only to the groups that are displayed.
Click to select the display position.
When you are finished selecting, click OK.

Click **OK** to add a position mark at cursor A.

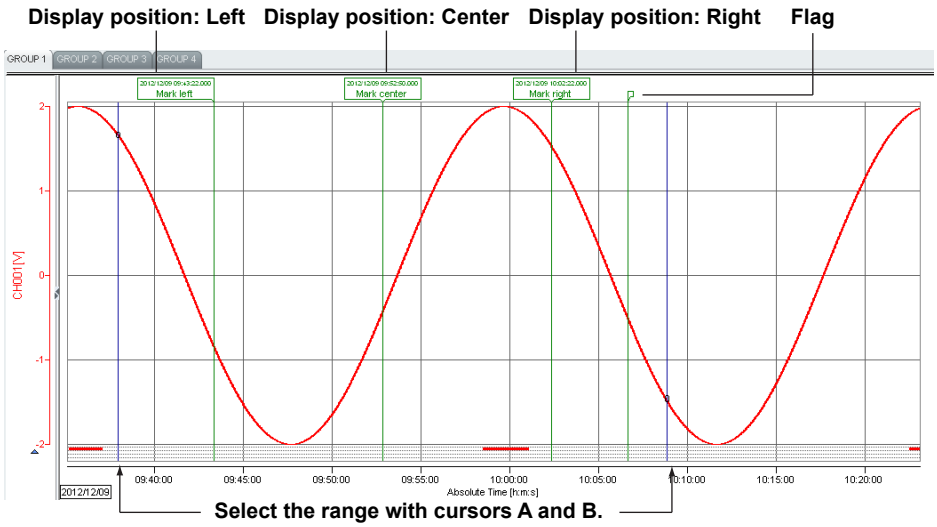
Note

- The time display shows absolute times or relative times from the first data point, depending on the time axis setting. If you set Type to flag, no time information is displayed.
- To change an existing mark, double-click the mark to open the Mark Settings dialog box. Then, follow the steps from step 3 to edit it.
- You can only change the display position and time display for marks that were added during recording.
- Marks and mark lines that you add with Universal Viewer are displayed in green.

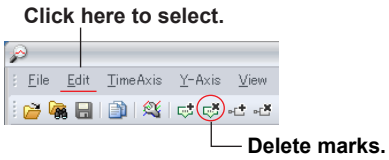
Deleting Marks

Procedure

1 Specify cursors A and B so that the marks you want to delete fall between the cursors.



2 On the **Edit** menu, click **Delete Mark**. Or, click the corresponding button on the toolbar.



All the marks within the cursor range (including those at the cursor positions) are deleted.

Resetting the Marker Display

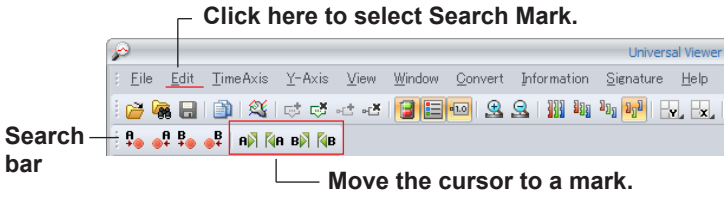
On the **Edit** menu, click **Reset Mark** to delete all marks. Marks (messages and triggers) saved in data files are not deleted.

Note

If you select Delete Mark from the menu, the marks between cursors A and B, the marks at the cursor positions, and the marks saved in the data file are cleared from the display. If you reset the marks, only the marks saved in the data file are displayed.

Searching for Marks

You can search for mark positions and move the cursors to the found positions.
On the **Edit** menu, click **Search Mark**, and select a position. Or, click the corresponding button on the toolbar.



▶ Searching for alarms and marks (section 3.4)

Changing the Display Order of Marks

If multiple marks overlap and you want to change their display order, hold down the Shift key and click a mark. Each time you click, the mark switches between being displayed in front and back.

3.1.11 Adding, Editing, and Deleting Mark Notes

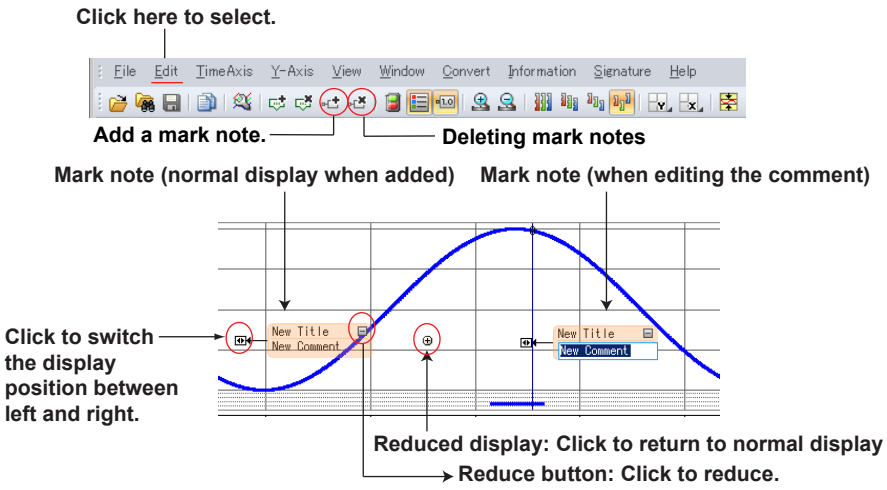
Adding a Mark Note

You can add mark notes to any position you like in the waveform display window.
For each mark note, you can enter a title and comment.

Procedure

1. Click the position where you want to add a mark note.
   Cursor A appears.

2. On the **Edit** menu, click **Append Mark Note**. Or, click the corresponding button on the toolbar.
   A mark note is added to the cursor A position.


Click here to select.
File Edit TimeAxis Y-Axis View Window Convert Information Signature Help
Add a mark note.
Deleting mark notes
Mark note (normal display when added)
Mark note (when editing the comment)
Click to switch the display position between left and right.
New Title
New Comment
New Title
New Comment
Reduced display: Click to return to normal display
Reduce button: Click to reduce.

3. Double-click the title area of the mark note or the comment area.
   The cursor blinks, and you can enter characters.

4. After you enter the characters, click anywhere outside the current text area.
   The characters are applied.

Note

- You can enter up to 60 characters for titles and 250 characters for comments. If the characters do not fit in a display area, the overflowing characters are replaced with an ellipsis.
- To edit an existing mark note, follow steps 3 and 4.

Switching Display Positions

Clicking the button shown in the figure will switch the display position of the corresponding mark note between left and right.
Clicking the compact button changes normal display to compact display.
Mark notes are displayed in order from the back as they are created. This order cannot be changed.

Moving a Mark Note

To move a mark note, drag it in the desired direction.

Deleting Mark Notes

Specify cursors A and B so that the mark notes you want to delete fall between the cursors.
On the **Edit** menu, click **Erase Mark Note**. Or, click the corresponding button on the toolbar.

3.1.12 Displaying Image Marks

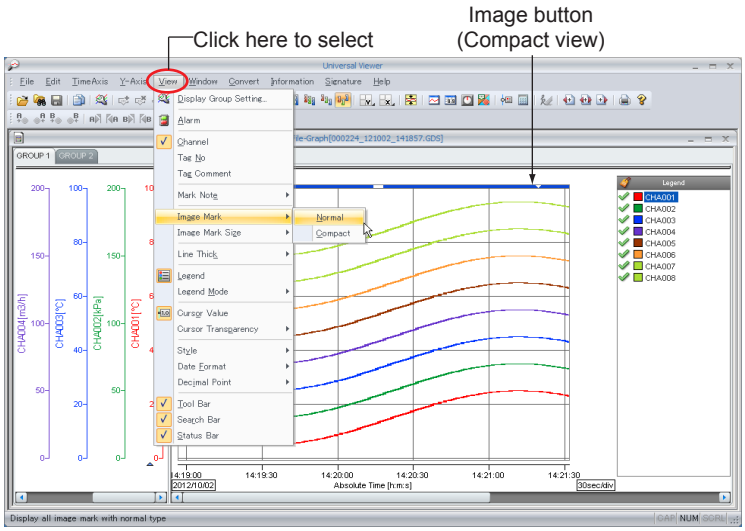
If a handwritten signature is included in a data file, you can use the Image Mark dialog box to display it.
In the waveform display, an image bar and image button appear.
An image button indicates the image mark display condition. You can use it to change the display.

Changing the Display of All Image Marks

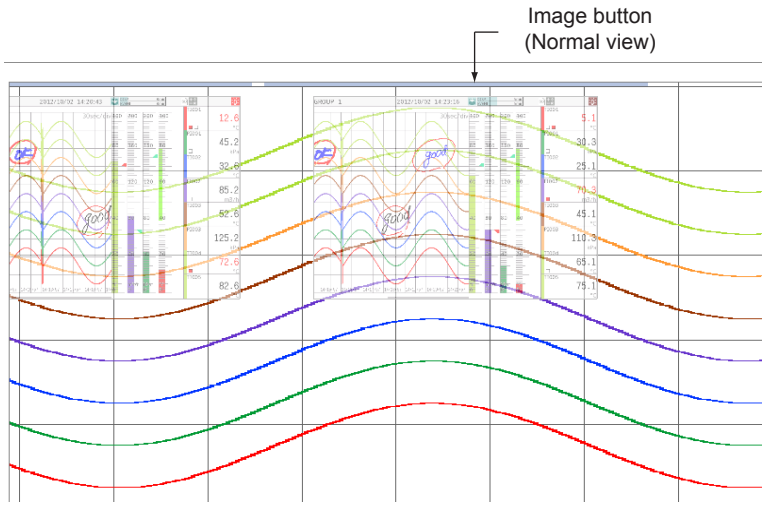
You can set the image mark display to **Normal** or **Compact**.
When set to Compact, image marks are hidden.
You can also change the image size to display.

Procedure

1 On the **View** menu, click **Image Mark** and then **Normal** or **Compact**. Here, compact will be changed to normal.



All image marks in the waveform display area are set to normal display, and the image buttons change in color.



2 To change the display size, on the **View** menu, click **Image Mark Size** and then the appropriate size. Select from **Small**, **Normal**, and **Large**.
The display size of all image marks in the waveform display area will change.

Note

- When the display mode is set to Normal, image marks are displayed semi transparently. Close buttons are not displayed.
- When set to Compact, image marks are hidden.

Changing the Display of a Specific Image Mark

You can use the image button to change the display condition of each image mark. Image buttons are located on the Image Mark bar, and their colors vary depending on the display conditions of the image marks.

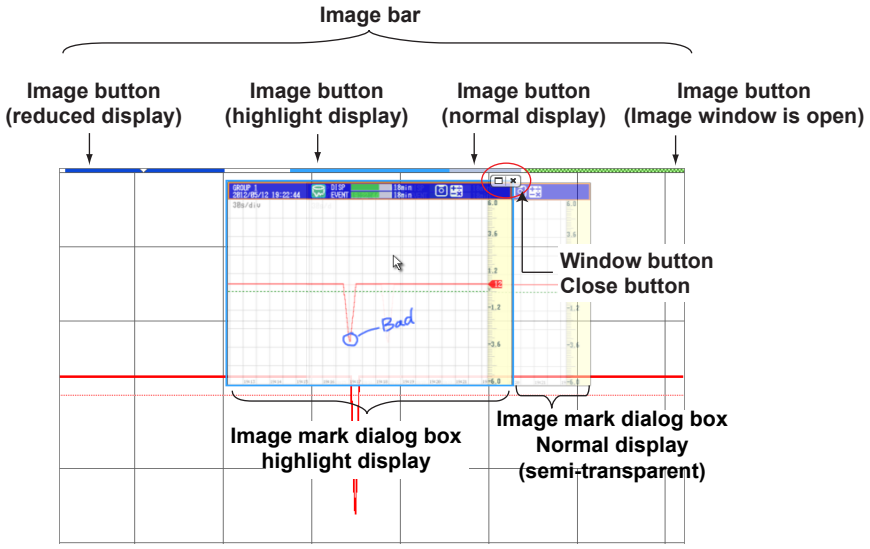
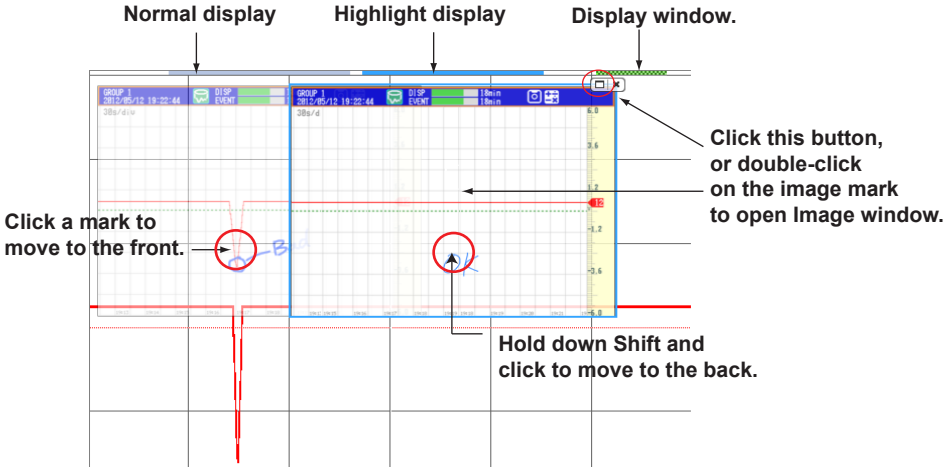


Image bar
Image button (reduced display)
Image button (highlight display)
Image button (normal display)
Image button (Image window is open)
Window button
Close button
Image mark dialog box highlight display
Image mark dialog box Normal display (semi-transparent)

Clicking an image button changes the display condition between normal display, highlight display, window display, and compact display.
The table below describes the different display conditions.

Image Button	Definition	Condition
	Compact mode	image mark not displayed.
	Normal mode	image mark is displayed semi transparently.
	Highlight mode	The frame is highlighted, and the image is displayed most clearly. The window close button is displayed.
	Window mode	Image window is displayed.

If multiple image marks overlap, you can change their display order.


Normal display
Highlight display
Display window.
Click this button, or double-click on the image mark to open Image window.
Click a mark to move to the front.
Hold down Shift and click to move to the back.

To change the display order of an image mark, click the image button or image mark to bring the image to the front; or hold down the Shift key and click to bring it to the back.

Note

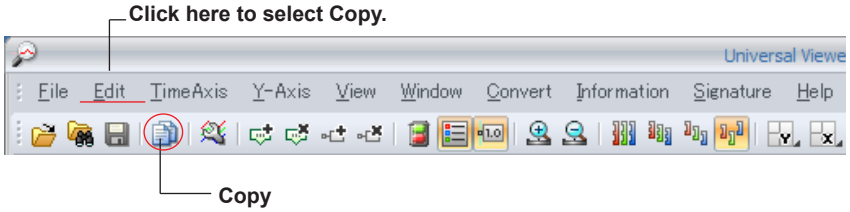
- image marks can be displayed only in the waveform display window.
- When you move the cursor over an image button or image mark, the button or image is highlighted, but the display order remains unchanged.

3.1.13 Changing the Waveform Thickness

Select the waveform thickness from three options (Normal, Middle, and Thick).
On the **View** menu, click **Line Thick**, and select the thickness you want.

3.1.14 Copying Waveforms

You can copy the screen image of the waveform display window to the clipboard.
On the **Edit** menu, click **Copy**. Or, click the corresponding button on the toolbar.



Note

The window screen image can also be copied in the circular display window.
You can paste the image copied to the clipboard to another application for use.

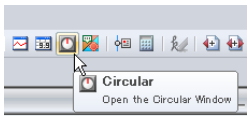
3.2 Displaying Waveforms on a Circular Chart

You can display data sampled on different channels of a recorder as waveforms on a circular chart.

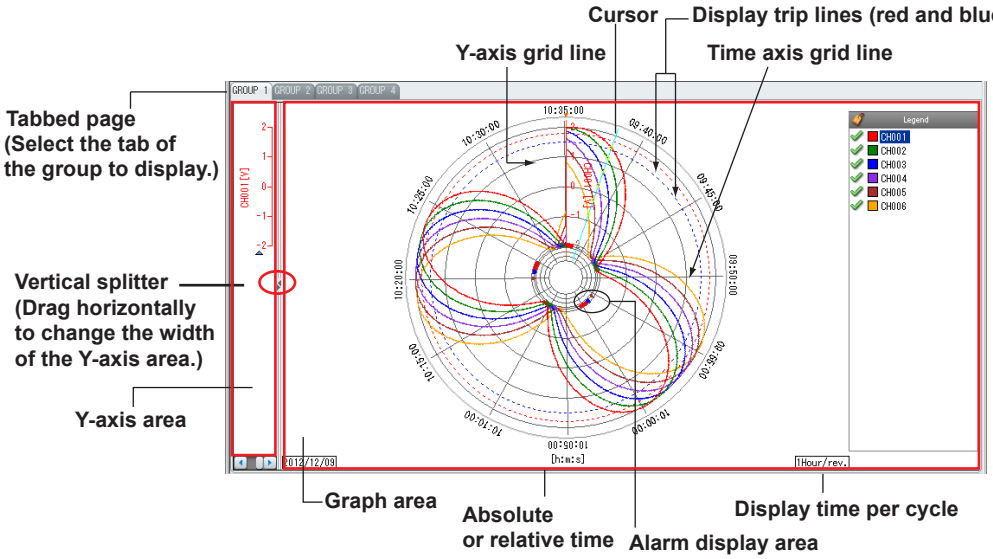
3.2.1 Circular Display Window

Procedure

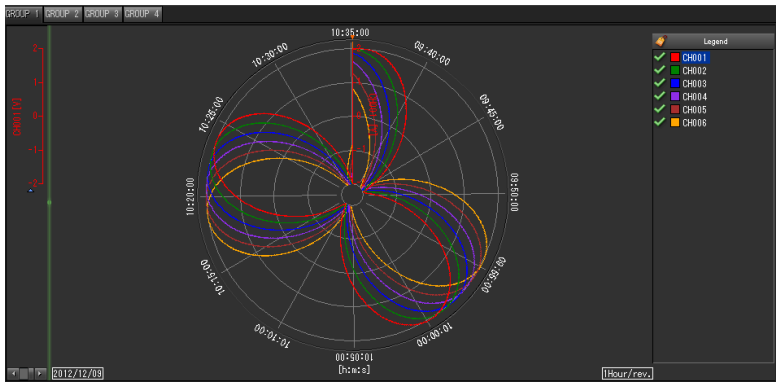
1 To open the circular display window, on the **Window** menu, click **Circular**. Or, click the **Circular** button.



The circular chart appears.



Circular display example (light style)



Circular display example (dark style)

This section explains display setting operations that are different from the waveform display window.

3.2.2 Setting Display Group Details

To set channel groups and how to display waveforms, use the Display Group Setting dialog box. In the circular display, the following items in the dialog box are different from the waveform display.

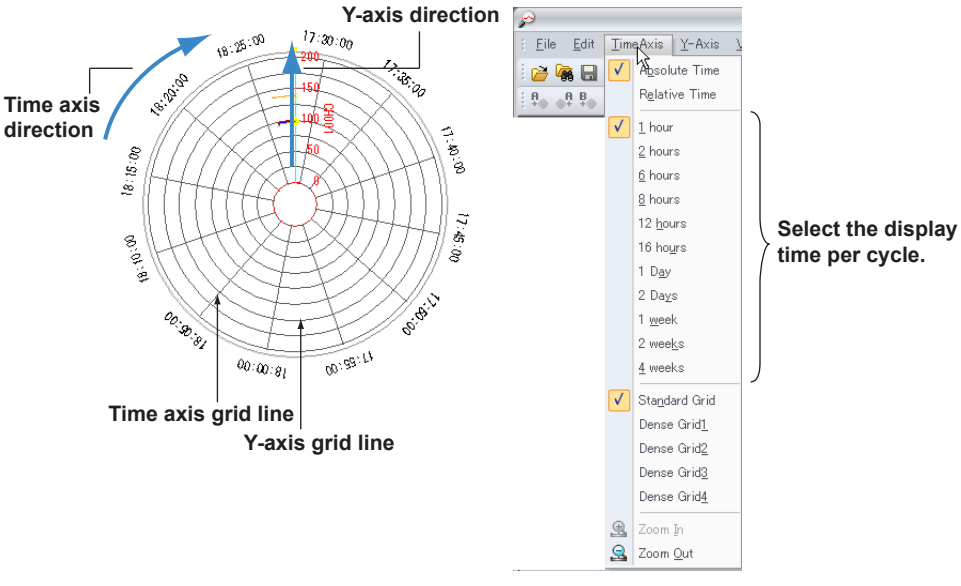
Trip Lines

You cannot drag trip lines to the circular display.
You can change trip line positions by changing the corresponding values in the Display Group Setting dialog box.

▶ Setting display group details (**section 3.1.2**)

3.2.3 Setting the Time Axis

Use the **Time** menu to set the X-axis.
In the circular display, the Y-axis spans from the center of the circle to its perimeter, and the X-axis runs along the perimeter, as shown in the figure below.

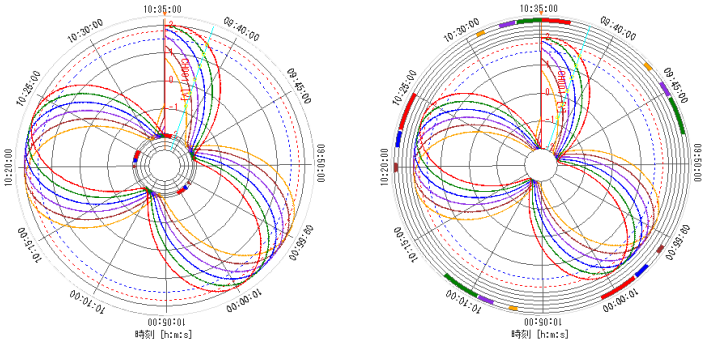


Changing the Display Cycle

To change the display cycle (the length of time per cycle), select the cycle that you want to display from the **Time** menu.

3.2.4 Displaying Alarms

You can select where to display alarms: on the inside or the outside.
On the **View** menu, click **Alarm Inside** or **Alarm Outside**.
Alarms 1, 2, 3, and 4 are displayed in ascending order from the outside to the inside of the circular display.

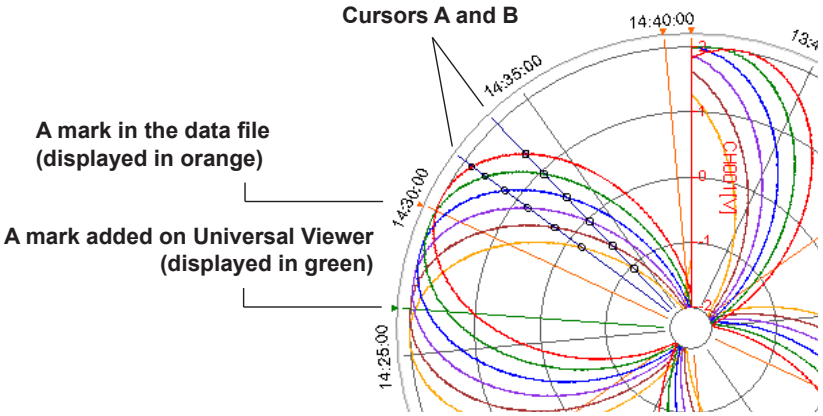


Alarm inside

Alarm outside

3.2.5 Displaying Cursors and Marks

- The way to specify cursors in the circular display window is the same as in the waveform display window. Click a location in the graph area to display cursor A. Drag the cursor and release it at a different location to display cursor B. However, you cannot place cursor B outside the current display range.
- The way to add, delete, and reset marks in the circular display window is the same as in the waveform display window. A mark on a circular display is shown with a pointer and line (see the figure below).



Note

If you set, clear, or reset items in the circular display window, the result of the operation is reflected in the other displays.

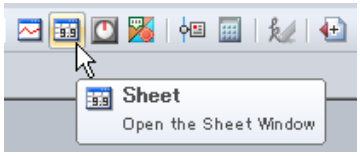
3.3 Displaying Digital Values

You can display data sampled on different channels of a recorder in a spreadsheet, with data entries arranged by their timestamps.

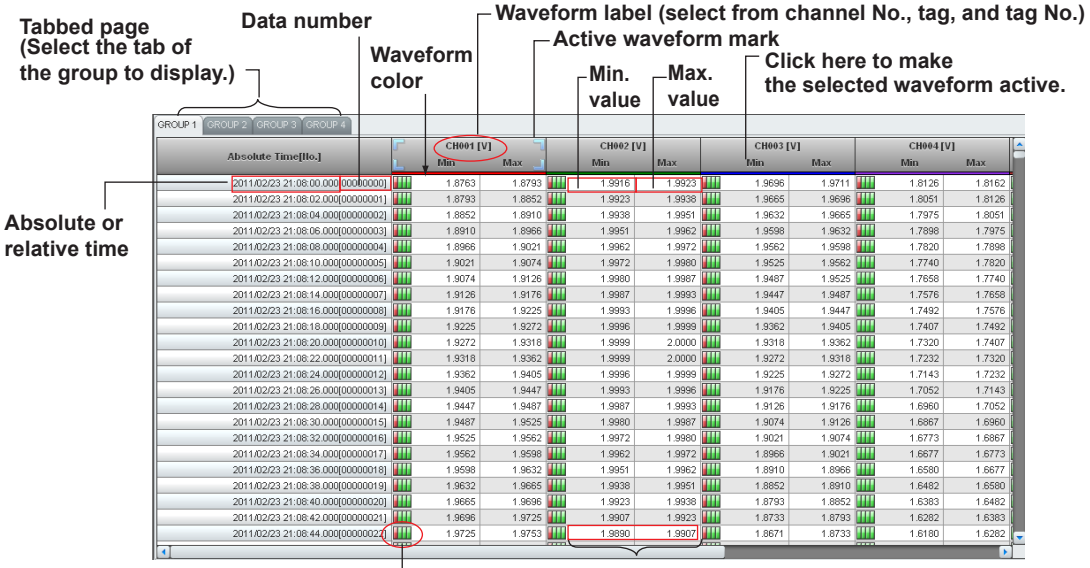
3.3.1 Digital Display Window

Procedure

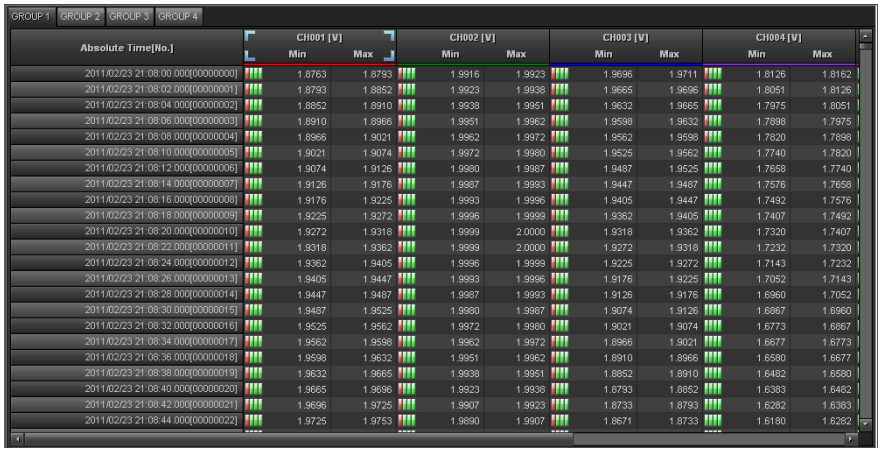
1. To open the digital display window, on the **Window** menu, click **Sheet**. Or, click the Sheet button on the toolbar.



Digital values will appear.


Tabbed page (Select the tab of the group to display.)
Data number
Waveform color
Waveform label (select from channel No., tag, and tag No.)
Active waveform mark
Min. value
Max. value
Click here to make the selected waveform active.
Absolute or relative time
Alarm display
Red indicates alarm occurrence.
(displays the conditions of alarms 1, 2, 3, and 4 from the left)
Only instantaneous values are displayed for an event data file.

Digital display example (light style)



Digital display example (dark style)

3.3.2 Setting Display Group Details

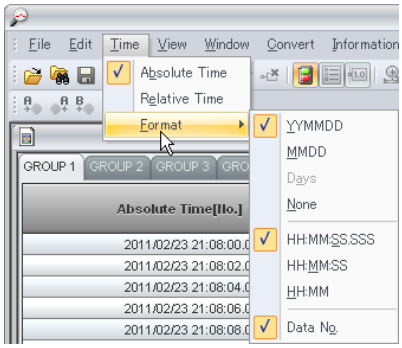
The settings in the Display Group Setting dialog box that affect the digital display are as follows:

- Active display group
- Display group name (tab title name)
- Waveform display on/off state
- Channels (assignment of channels to waveforms)
- Display format of values related to waveforms (Y-axis scale, cursor values, and trip line values)
- Waveform colors

▶ Setting display group details (**section 3.1.2**)

3.3.3 Setting the Time Axis

On the **Time** menu, click **Absolute Time** or **Relative Time**. Then, on the **Time** menu, click **Format**, and select the display format. Clear the **Data No.** check box to hide it.



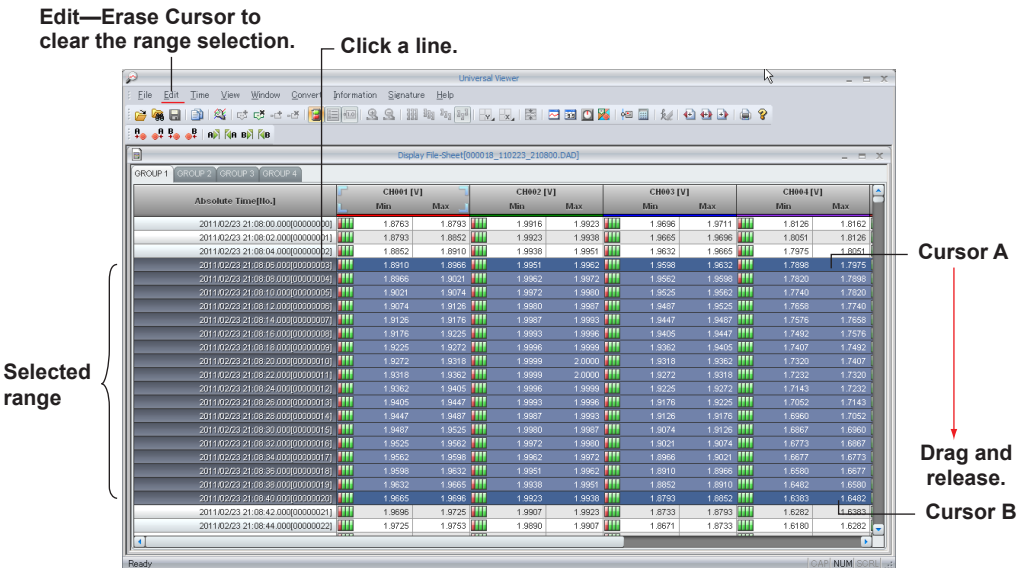
3.3.4 Setting Cursors

To specify cursors on the digital display window, select lines in the spreadsheet.

Procedure

1 Click the line where you want to set a cursor.
The line is selected, and cursor A is set.

2 Drag the cursor to the line where you want to set cursor B, and release the mouse button.
The line where you release the mouse button will be the cursor B position.



3 To clear the cursors, on the **Edit** menu, click **Erase Cursor**.
The range selection will be released.

Note

You can use the keys below to move the display range.
- Press the UP ARROW key to scroll a line up and the DOWN ARROW key to scroll a line down.
- Press the PAGE UP key to show the previous page and the PAGE DOWN key to show the next page.
- Press the RIGHT ARROW key or LEFT ARROW key, respectively, to move one channel to the right or left.

Selecting All Data Points

On the **Edit** menu, click **Select All** to move cursor A to the beginning of the data and cursor B to the end of the data.

Copying Data

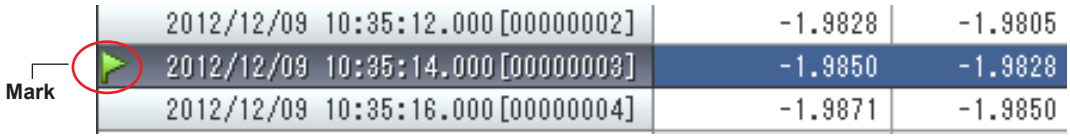
On the **Edit** menu, click **Copy** to copy the data between cursors A and B.

3.3.5 Adding a Mark

In this window, click a line to add a mark.
For details, see “Adding, Editing, and Deleting Marks” in section 3.1, “Displaying Waveforms.”

Procedure

1. Click the line where you want to add a mark.
   Cursor A is set.
2. On the **Edit** menu, click **Append Mark**. Or, click the corresponding button on the toolbar.
   The Mark Settings box appears.
3. Edit the mark information, and click **OK**.
   A mark is added to the cursor A line.



Note

If you set, clear, or reset cursors or markers in the digital display window, the result of the operation is reflected in the other displays.

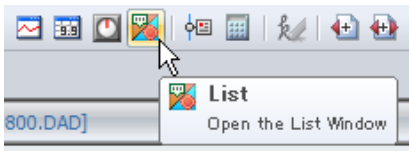
3.4 Displaying a List of Alarms and Marks

When a display data file or event data file is open, you can view information related to alarms, marks, events, control operations, and operation log entries in list form.
To convert and save this information, see section **"3.10 Converting Data".**

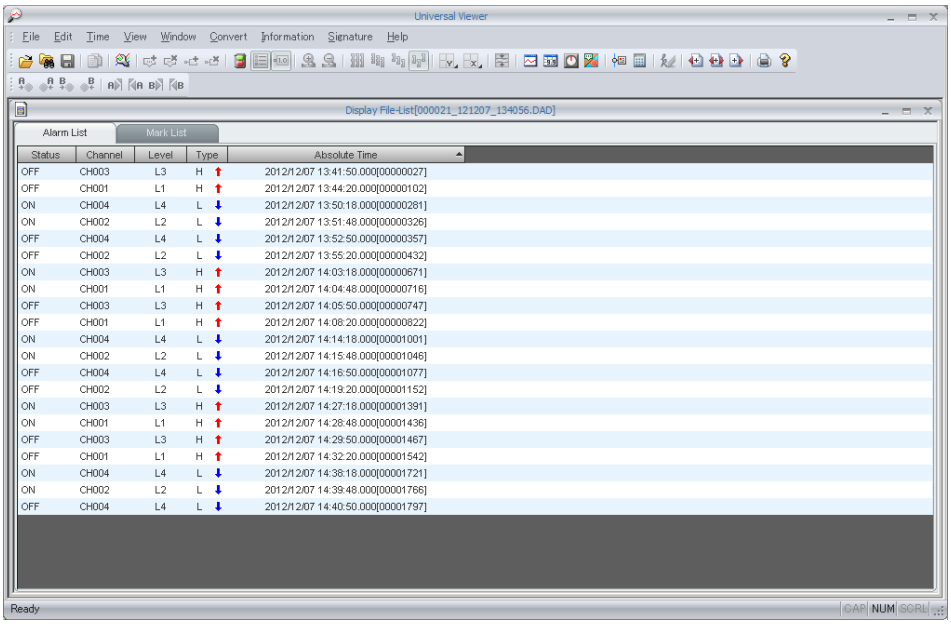
3.4.1 List display window

Procedure

1 To open the list display window, on the **Window** menu, click **Alarm/Mark**. Or, click the **Alarm Mark** button on the toolbar.



Alarm information will be displayed.



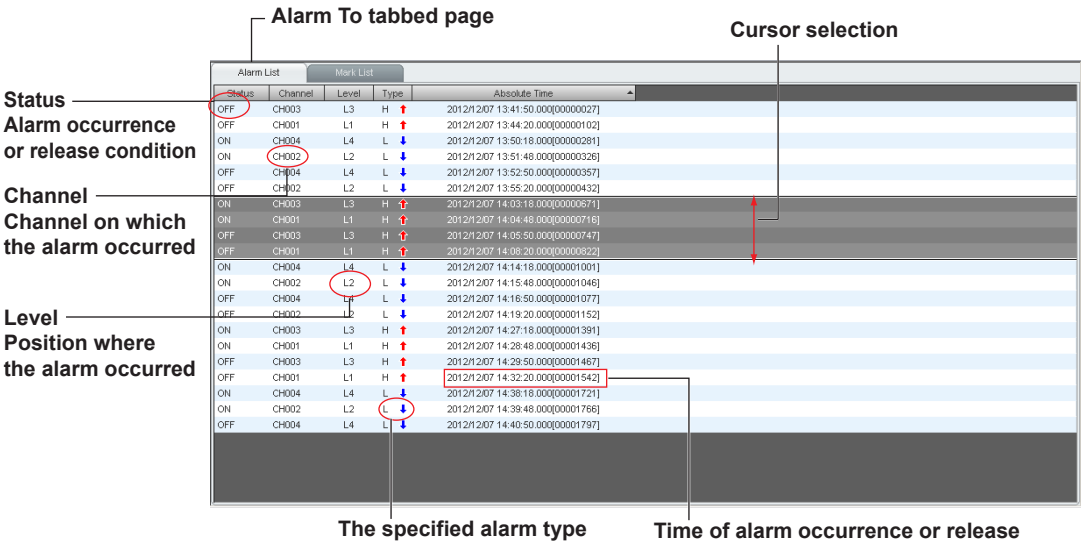
The alarm/mark display window consists of the following five tabbed pages.

- Alarm To tabbed page
- Mark To tabbed page
- Event To tabbed page
- Ctrl Mode To tabbed page
- Operation Log tabbed page

The Alarm To and Mark To tabbed pages are always displayed, but whether the other three tabbed pages are displayed depends on the model and feature of the recorder that sampled the data.
For details on the Event To and Ctrl Mode To tabbed pages, see **section 3.5**. For details on the Operation Log tabbed page, see **section 3.6**.

▶ Files that can be displayed and their extensions (**section 1.1.1**)

3.4.2 Alarm To Tabbed Page



The Alarm To tabbed page lists the alarm information (changes in the alarm status during recording) in the data file. The table below describes the displayed items.

Status

Display	Description
ON	Alarm occurrence
OFF	Alarm release
ACK	Alarm ACK operation

Level

Display	Description
L1	Alarm 1
L2	Alarm 2
L3	Alarm 3
L4	Alarm 4
ALL	Alarms 1 to 4

Alarm Type

Display	Description
OFF	Alarm off
H	high limit alarm
L	low limit alarm
dH	Difference high limit alarm
dL	Difference low limit alarm
RH	High limit on rate-of-change alarm
RL	Low limit on rate-of-change alarm
tH	Delay high limit alarm
tL	Delay low limit alarm
PVH	Measurement high limit alarm
PVL	Measurement low limit alarm
DVH	Deviation high limit alarm
DVL	Deviation low limit alarm
DVO	Deviation out limit alarm
DVI	Deviation in limit alarm
SPH	Setting high limit alarm
SPL	Setting low limit alarm
OTH	Output high limit alarm
OTL	Output low limit alarm
ETC	Other CX alarm
???	Other non-CX alarm
???	Alarm Ack [ALL](when all alarms are acknowledged)

Procedure

Sorting Data

On the Alarm To tabbed page, click a title item to sort the list by the item.
The first time you click, the list is sorted in ascending order; the second time you click, in descending order.

Copying Data

Specify the cursor range. Click a line to select cursor A and drag to cursor B. (The method is the same as in the digital display window.)
On the **Edit** menu, click **Copy** to copy the data between cursors A and B to the clipboard. The status, channel, level, type, and time information is copied. For the type, only the character string is copied. The data numbers in the Time column are not copied.

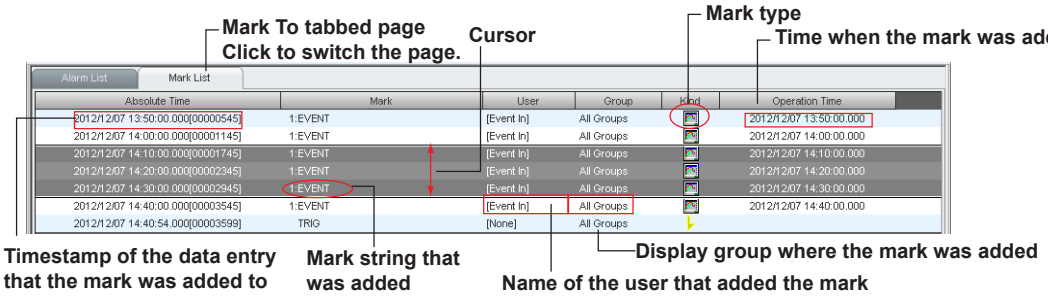
In addition to the operations above, you can specify the following settings on the Alarm To tabbed page.

- Switch the channel string (View menu)
- Switch between absolute and relative time (Time Axis menu)
- Switch the time display format (Time Axis menu)
- Show or hide data numbers (Time Axis menu)
- Search for alarms (Edit menu or search bar)
- Clear cursors (Edit menu)
- Select all data (Edit menu)
- Add marks (Edit menu or toolbar)
- Delete marks (Edit menu or toolbar)
- Reset marks (Edit menu)
- Search for marks (Edit menu or search bar)

Note

If you set, clear, or reset items in the Alarm To tabbed page, the result of the operation is reflected in the other displays.

3.4.3 Mark To Tabbed Page



The Mark To tabbed page lists mark information (marks added during recording and marks added on Universal Viewer) in the data file. The displayed items are described below.

Mark

If the mark string is too long and does not fit in the display area, the overflowing characters are replaced with an ellipsis.

User

Display	Description
Key In	Key input by a user or when key login is disabled
Username	Key input by a user or when key login is enabled The name of the user who made the key input appears.
Remote In	Input by remote input
Comm. In	Input using a communication command
Event In	Input by event input
None	Input by a trigger or on Universal Viewer
Unknown	Input other than above

Group

Display	Description
All Groups	Mark that applies to all groups
Group a, Group b, Group c, etc.	Displays the applicable group number*

* When the applicable group is one group: Group a
When the applicable groups are multiple groups: Group a, Group b, Group c

- a, b, c: Group numbers The number of digits is not fixed. The numbers are shown in ascending order.
- If the group string is too long and does not fit in the display area, the overflowing characters are replaced with an ellipsis.

Type

Display	Description
	Trigger position
	Message created on the recorder and saved in the data file
	Mark added on Universal Viewer

Procedure

Copying Data

Specify the cursor range. Click a line to select cursor A and drag to cursor B. (The method is the same as in the digital display window or the Alarm To tabbed page.)
On the **Edit** menu, click **Copy** to copy the information between cursors A and B to the clipboard. However, the icons under the mark Type column are changed to the following character strings.

Display	Recorder Model That Created the Data File	String That Is Copied
	—	TRIG
	DX100, DX200	DX
	MV100, MV200	MV
	CX1000, CX2000	CX
	DX100P, DX200P	DXP
	FX100	FX
	DX1000, DX2000	DX-Adv.
	DX364	DX-Adv.
	MV1000, MV2000	MV-Adv.
	FX1000	FX-Adv.
	AX100	AX
	GX20	GX
	—	Viewer

In addition to the operations above, you can specify the following settings on the Mark To tabbed page.

- Switch between absolute and relative time (Time Axis menu)
- Switch the time display format (Time Axis menu)
- Show or hide data numbers (Time Axis menu)
- Search for alarms (Edit menu or search bar)
- Clear cursors (Edit menu)
- Select all data (Edit menu)
- Add marks (Edit menu or toolbar)
- Delete marks (Edit menu or toolbar)
- Reset marks (Edit menu)
- Search for marks (Edit menu or search bar)

Note

If you set, clear, or reset items in the Mark To tabbed page, the result of the operation is reflected in the other displays.

3.5 Listing Event Information and Control Modes (CX1000/CX2000)

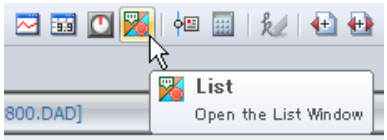
You can display event information and control mode information for display data files and event data files whose data has been sampled on the CX1000 or CX2000.
These two sets of information are displayed on the Event To tabbed page and Ctrl Mode To tabbed page in the alarm/mark display window (**section 3.4**). The file name extension is .cds (display data files) or .cev (event data files).

3.5.1 Event To Tabbed Page

The Event To tabbed page lists events that occurred during memory sampling.

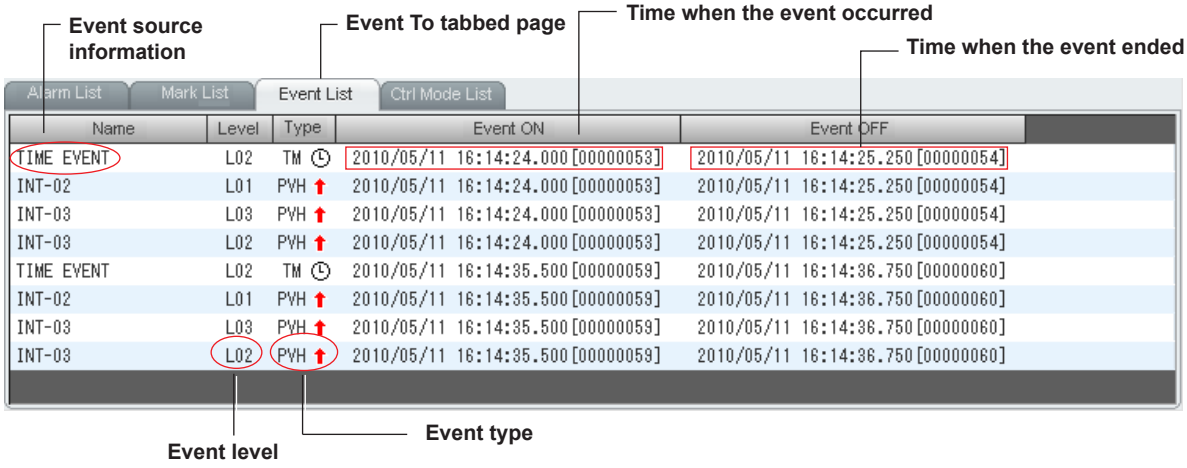
Procedure

1. To open the list display window, on the **Window** menu, click **Alarm/Mark**. Or, click the **Alarm Mark** button on the toolbar.



The Alarm/Mark window will appear.

2. Click the **Event To** tab.



Sorting Data

On the Event To tabbed page, click a title item to sort the list by that item.
The first time you click, the list is sorted in ascending order; the second time you click in descending order.
The table below shows the ascending sort rule.

Title	Ascending Display Order
Name	Time event, PV event. PV events are sorted by the displayed character strings.
Level	Ascending order from L01 to L16
Type	Off, time event, measurement high limit, measurement low limit, deviation high limit, deviation low limit, deviation out limit, deviation in limit, setting high limit, setting low limit, output high limit, output low limit
Event ON	Ascending order by event on time, space
Event OFF	Ascending order by event off time, space

Copying Data

Specify the cursor range. Click a line to select cursor A and drag to cursor B.
On the **Edit** menu, click **Copy** to copy the data between cursors A and B to the clipboard.
The name, level, type, event ON, and event OFF information is copied. For the type, only the character string is copied. The data numbers in the Time column are not copied.

In addition to the operations above, you can specify the following settings on the Event To tabbed page.

- Switch between absolute and relative time (Time Axis menu)
- Switch the time display format (Time Axis menu)
- Show or hide data numbers (Time Axis menu)
- Search for alarms (Edit menu or search bar)
- Clear cursors (Edit menu)
- Select all data (Edit menu)
- Add marks (Edit menu or toolbar)
- Delete marks (Edit menu or toolbar)
- Reset marks (Edit menu)
- Search for marks (Edit menu or search bar)

Explanation

The items on the Event To tabbed page and their descriptions are provided below.

Name

Display	Event Type	Tag Number Available?	Loop Type	Description
TIME EVENT	Time event			TIME EVENT
[TagNo]	PV event	Yes		Tag number string
INT- [LoopNo]		No	Internal	INT-[loop number]
EXT- [LoopNo]			External	EXT-[loop number]

Loop numbers are displayed in two digits. A zero is inserted in the tens digit for numbers less than 10.

Level

Displays L01 to L16.

Type

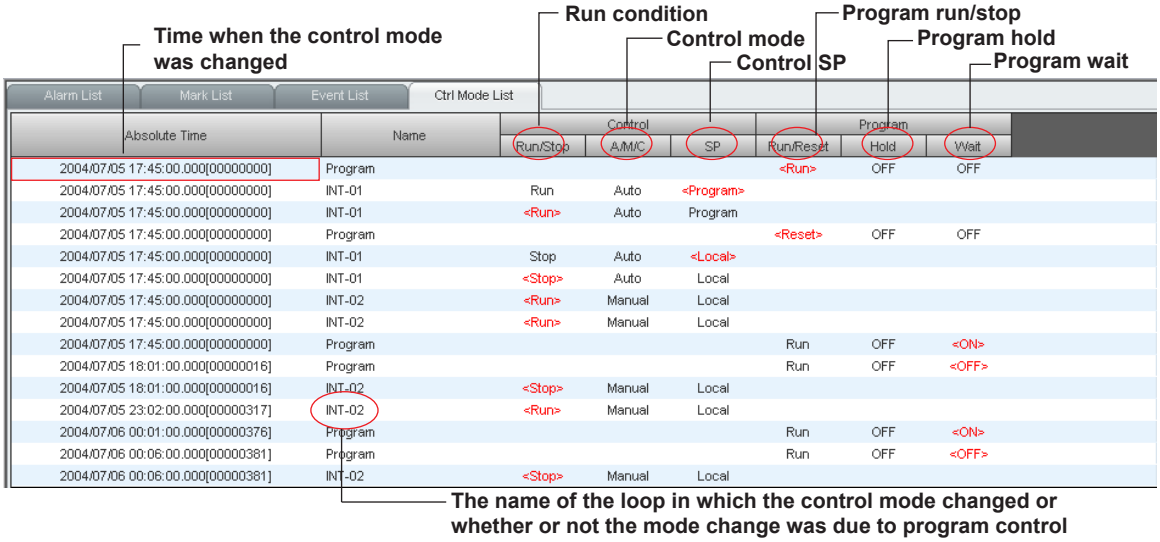
Display	Description
OFF	Event off or event setting release
TM	Time event
PVH	Measurement high limit
PVL	Measurement low limit
DVH	Deviation high limit
DVL	Deviation low limit
DVO	Deviation out limit
DVI	Deviation in limit
SPH	Setting high limit
SPL	Setting low limit
OTH	Output high limit
OTL	Output low limit
???	Displayed in cases other than the above

Event ON and Event OFF

Displays the time an event occurred and the time the event was released in the specified format.

3.5.2 Ctrl Mode To Tabbed Page

The Ctrl Mode To tabbed page displays control mode information.
The method to show this page is the same as that for the Event To tabbed page. On the **Window** menu, click **Alarm/Mark** and then the **Ctrl Mode To** tab.



Copying Data

Specify the cursor range. Click a line to select cursor A and drag to cursor B.
On the **Edit** menu, click **Copy** to copy the data between cursors A and B to the clipboard. The time; name; control mode; control's A, M, or C; control SP; program mode; program hold; and program wait information is copied. However, data numbers in the time column are not copied.

Converting Data

The event information in the data file that is currently displayed can be converted and saved in Excel or ASCII format. On the **Convert** menu, click **Ctrl Mode To** to open the Ctrl Mode To dialog box. Set the conditions for converting and saving the file in this dialog box.

▶ Converting data (**section 3.10**)

In addition to the operations above, you can specify the following settings on the Ctrl Mode To tabbed page.

- Switch between absolute and relative time (Time Axis menu)
- Switch the time display format (Time Axis menu)
- Show or hide data numbers (Time Axis menu)
- Search for alarms (Edit menu or search bar)
- Clear cursors (Edit menu)
- Select all data (Edit menu)
- Add marks (Edit menu or toolbar)
- Delete marks (Edit menu or toolbar)
- Reset marks (Edit menu)
- Search for marks (Edit menu or search bar)

Explanation

The items on the Ctrl Mode To tabbed page and their descriptions are provided below.

Time

Time when the control mode was changed The display format is the same as that of the windows and tabbed pages of other list formats.

Name

The name of the loop in which the control mode changed or whether or not the mode change was due to program control
If the event is a control mode change, the display format varies depending on whether there is tag information.
If the event is program control, “Program” is displayed.

Display	Control Type	Tag Number Available?	Loop Type	Description
Programs	Program control			
[TagNo]	Control mode	Yes		Tag number string
INT- [LoopNo]		No	Internal	INT-[loop number]
EXT- [LoopNo]			External	EXT-[loop number]

Ctrl—Run/Stop

Nothing is displayed for program control.

Display	Description
Run	Running
Stop	Stopped
Red characters enclosed in angle brackets.	Indicates that the state has changed.
Black characters not enclosed in angle brackets.	Indicates that the state has not changed.

Ctrl—A/M/C

Indicates auto, manual, or cascade control mode.
The meaning of the character color and the angle brackets are as described above.

Ctrl—SP

Indicates whether the SP value is in remote, local, or program mode.
The meaning of the character color and the angle brackets are as described above.

Display	Description
Local	Indicates local mode.
Remote	Indicates remote mode.
Program	Indicates program mode.

Program—Run/Stop

Nothing is displayed for control mode.

Display	Description
Run	Program control is running.
Stop	Program control is stopped.
Red characters enclosed in angle brackets.	Indicates that the program condition has changed.
Black characters not enclosed in angle brackets.	Indicates that the program condition has not changed.

Program—Hold

Indicates program control hold and release condition.
The meaning of the character color and the angle brackets are as described above. Nothing is displayed for control mode.

Display	Description
ON	Indicates program control hold.
OFF	Indicates program control hold release.

Program—Wait

Indicates program control wait and release condition.
The meaning of the character color and the angle brackets are as described above. Nothing is displayed for control mode.

Display	Description
ON	Indicates program control hold.
OFF	Indicates program control hold release.

3.6 Listing the Operation Log (DX100P/DX200P or DX1000/DX1000N/DX2000 with the /AS1 option)

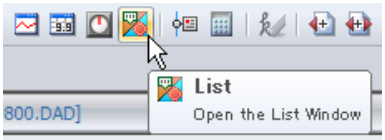
You can display operation logs of display data files and event data files that have been sampled on the DX100P; DX200P; or DX1000, DX1000N, or DX2000 with the /AS1 option. Operation logs are displayed on the Operation Log tabbed page in the Alarm/Mark window (**section 3.4**). The file name extension is .GDS, .DSD, or .DBD (display data files) or .GEV, .DSE, .DBE (event data files).

3.6.1 Operation Log Tabbed Page

The Operation Log tabbed page lists operation log information in data files.

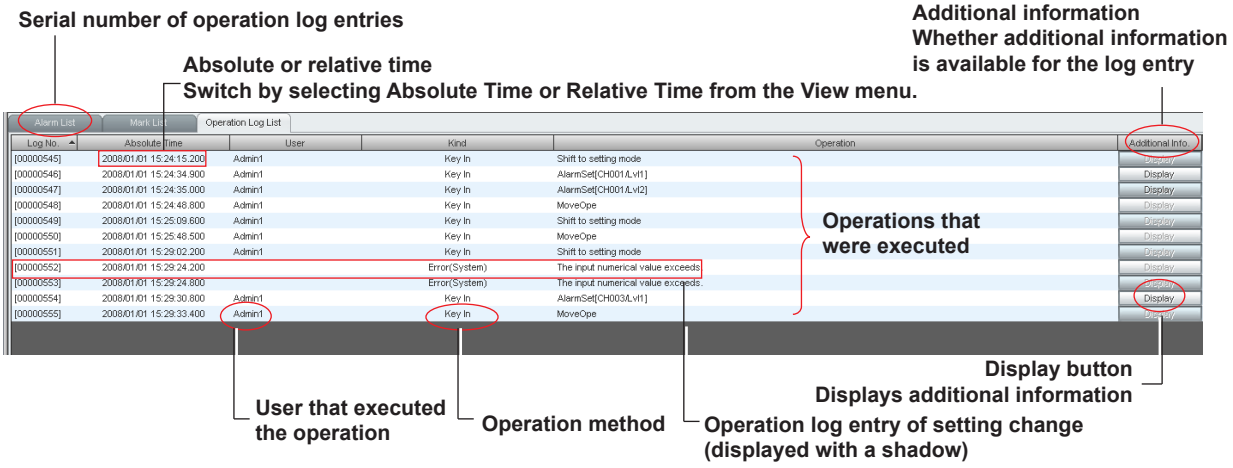
Procedure

1 To open the list display window, on the **Window** menu, click **Alarm/Mark**. Or, click the **Alarm Mark** button on the toolbar.



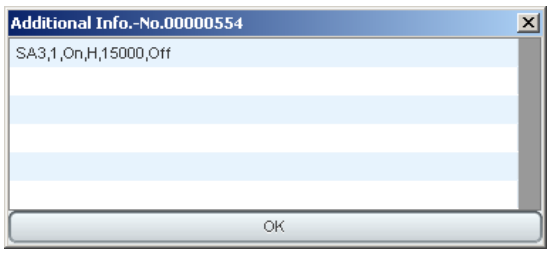
The Alarm/Mark window will appear.

2 Click the **Operation Log** tab.


Serial number of operation log entries
Absolute or relative time
Switch by selecting Absolute Time or Relative Time from the View menu.
Additional information
Whether additional information is available for the log entry
Alarm List
Mark List
Operation Log List
Log No.
Absolute Time
User
Kind
Operation
Additional Info.
[00000545] 2008/01/01 15:24:15.200 Admin1 Key In Shift to setting mode
[00000546] 2008/01/01 15:24:34.900 Admin1 Key In AlarmSet[CH001/Lvl1]
[00000547] 2008/01/01 15:24:35.000 Admin1 Key In AlarmSet[CH001/Lvl2]
[00000548] 2008/01/01 15:24:48.800 Admin1 Key In MoveOpe
[00000549] 2008/01/01 15:25:09.600 Admin1 Key In Shift to setting mode
[00000550] 2008/01/01 15:25:48.500 Admin1 Key In MoveOpe
[00000551] 2008/01/01 15:29:02.200 Admin1 Key In Shift to setting mode
[00000552] 2008/01/01 15:29:24.200 Error(System) The input numerical value exceeds.
[00000553] 2008/01/01 15:29:24.800 Error(System) The input numerical value exceeds.
[00000554] 2008/01/01 15:29:30.800 Admin1 Key In AlarmSet[CH003/Lvl1]
[00000555] 2008/01/01 15:29:33.400 Admin1 Key In MoveOpe
Operations that were executed
Display button
Displays additional information
User that executed the operation
Operation method
Operation log entry of setting change (displayed with a shadow)

For log entries that cannot be displayed in a single line, **Data Display** appears under **Additional Info**.

3. Click **Data Display**.



The Additional Info. box appears.

Note

If there are log entries of setting changes on the recorder that sampled the data, such entries are emphasized with text shadowing.
For these entries, you can start the configuration software from Universal Viewer to check all the settings of the recorder after the change. For instructions on how to start the configuration software, see the next section.

You can also perform the following operations on the Operation Log tabbed page.

- Switch between absolute and relative time (Time Axis menu)
- Switch the time display format (Time Axis menu)
- Select all data (Edit menu)
- Reset marks (Edit menu)
- Sort data (Edit menu)
- Copy data (Edit menu)

Converting Data

The operation log information in the data file that is currently displayed can be converted and saved in Excel or ASCII format. On the **Convert** menu, click **Operation Log** to open the Operation Log dialog box. Set the conditions for converting and saving the file in this dialog box.

▶ Converting data (**section 3.10**)

Explanation

The items on the Operation Log tabbed page and their descriptions are provided below.

Log No.

Serial number of operation log entries

Time

Time when the operation took place

User

Displays the user name

Kind

Displays the type of information according to the recorder product
In case of an error or alarm, “Error” or “Alarm” appears followed by the type of error or alarm in parentheses. For example, if an error occurred when a key was pressed, “Error(Key In)” appears. If an alarm occurred when a key was pressed, “Alarm(Key In)” appears.

Device Type	DX100P/DX200P	DX1000/DX1000N/DX2000 with the /AS1 option
Display	Key In	Key In
	Remote In	Remote In
	User Key In.	Comm. In
	Comm. In	Event
	PC Software	System
	Meas. Srv.(Monitor)	PC Software
	FTP Server	Warning
	Test Srv.(Setting)	Error
	Test Srv.(Monitor)	Unknown
	Serial Comm.	
	Auto	
	Warning	
	Error	
	Unknown	

Operation

The type of operation that took place is displayed. Operations vary depending on the model. The table on the next page shows the operations that are displayed on the Operation Log tabbed page.

List of Operations by Model

DX100P, DX200P

Operation	What Appears on the Screen (Bold words are displayed on the screen. Non-bold words are explanations.)
Login	**Login**
Logout	**Logout**
Invalid password	**Password refused**
Memory start	**Start memory**
Memory stop	**Stop memory**
Alarm acknowledgment	**Alarm ACK**
Message	**Message**
Manual sample	**Manual sample**
Trigger	**Trig**
Start computation	**Start Math function**
Stops computation	**Stop Math function**
Reset computation	**Reset Math data**
Computation dropout acknowledgment	**No Math data ACK**
Snapshot	**Snapshot**
Start mail	**Start mail**
Stop mail	**Stop mail**
Save display data	**Save Display Data**
Save event data	**Save Event Data**
Load display data	**Load Display Data**
Load event data	**Load Event Data**
Change settings	**Change configuration** [setting file sequence number]
Before time change	**Before time change**
Before time adjustment	**Before time adjust**
After time adjustment or change	**After change(adjust) time**
Power failure	**Power failure occurs**
Recovery after power failure	**Restart after Black Out**
Load login information	**Load login information**
Execute clear 1	**Clear 1**
Execute clear 2	**Clear 2**
Execute clear 3	**Clear 3**
Set batch number	**Set batch number**
Set lot number	**Set lot number**
Invalid password	**Password refused**
Save system mode configuration	**Save configuration (system mode)**
Save engineering mode configuration	**Save configuration (engineering mode)**
Load system mode configuration	**Load configuration (system mode)**
Load engineering mode configuration	**Load configuration (engineering mode)**
Change system mode configuration	**Change configuration** [setting file sequence number] **(system mode)**
Change engineering mode configuration	**Change configuration** [setting file sequence number] **(engineering mode)**
Change the engineering mode and system mode configurations	**Change configuration** [setting file sequence number] **(system mode & engineering mode)**
Change login information configuration	**Change configuration** [setting file sequence number] **(Login information)**
Change the system mode configuration and settings related to user registration	**Change configuration** [setting file sequence number] **(system mode & Login information)**
Login to A/D calibration mode	**Login(A/D calibration mode)**
Execute A/D calibration	**Execute A/D calibration**
Acknowledge unauthorized access	**Set user refused ACK**
Change password	**Change Password**
Shutdown	**Shutdown**
Upload file	**File Upload**
Download file	**File Download**
Change the number of calibration correction points	**Input calibration point change** (**CH** Channel number:previous number of points->new number of points)
Change the calibration correction value	**Set Point is changed** (**CH** Channel number **No.**Calibrated point**:**Value)
Reset computation	**Reset Math data (CH Channel number)**

Operation	What Appears on the Screen (Bold words are displayed on the screen. Non-bold words are explanations.)
Start gradual time adjustment	**Start of time adjustment** [Difference from the time to change to (+/-, minutes, seconds, milliseconds, microseconds)]
Adjust time using SNTP	**Time adjustment by the SNTP server.**
Switch in or out of daylight saving time	**Summer or winter time change.**
Save data from internal memory	**Manual data save to removable media.**
Change the engineering mode configuration and settings related to user registration	**Change configuration** [setting file sequence number] **(engineering mode & Login information)**
Change the engineering mode and system mode configuration and settings related to user registration	**Change configuration** [setting file sequence number] **(all)**

DX1000/DX1000N/DX2000 Models with Release Number 4 and the /AS1 Option

Operation	What Appears on the Screen (Bold words are displayed on the screen. Non-bold words are explanations.)
A/D calibration mode	**A/D calibration mode**
A/D calibration	**A/D calibration**
Power off	**Power off**
Power on	**Power on**
Login	**Login**
Logout	**Logout**
Invalid user	**Invalid user**
Change password	**Change Password**
Acknowledge unauthorized access	**Unauthorized access ACK**
Start memory	**Start memory** (when the batch group number is invalid)
	Start memory [Batch group number] (when the batch group number is valid)
Stop memory	**Stop memory** (when the batch group number is invalid)
	Stop memory [Batch group number] (when the batch group number is valid)
Acknowledge alarm	**Alarm Ack** [ALL] (when all alarms are acknowledged)
	Alarm Ack [CH Channel number/Lvl Alarm level](when not all alarms are acknowledged)
Reset alarm display	**Alarm Display Reset**
Message	**Message** (when the batch group number is invalid)
	Message [Batch group number] (when the batch group number is valid)
Manual sample	**Manual Sample**
Start computation	**Start Math function**
Stop computation	**Stop Math function**
Reset computation	**Reset Math data** (when the batch group number is invalid)
	Reset Math data [Batch group number] (when the batch group number is valid)
Acknowledge computation data dropout	**No Math data ACK**
Snapshot	**Snapshot**
Start mail	**Start mail**
Stop mail	**Stop mail**
Save display data	**Save Display Data** (when the batch group number is invalid)
	Save Display Data [Batch group number] (when the batch group number is valid)
Save event data	**Save Event Data** (when the batch group number is invalid)
	Save Event Data [Batch group number] (when the batch group number is valid)
Manual data save to removable media.	**Manual data save to removable media.**
New time after time change or adjustment	**New time after time change or adjustment**
Change time	**Time Correction**
Start time adjustment	**Time adjustment start** [Difference from the time to change to (the text in the data file is displayed)]
Stop time adjustment	**Time adjustment stop**
Change time using SNTP	**Time adjustment by the SNTP server.**

Operation	What Appears on the Screen (Bold words are displayed on the screen. Non-bold words are explanations.)
Switch in or out of daylight saving time	**Switch between normal and daylight saving time**
Set batch number	**Set batch number** (when the batch group number is invalid)
	Set batch number [Batch group number] (when the batch group number is valid)
Set lot number	**Set lot number** (when the batch group number is invalid)
	Set lot number [Batch group number] (when the batch group number is valid)
Writing to a batch text field	**Writing to batch text field** (when the batch group number is invalid)
	Writing to batch text field [Batch group number] (when the batch group number is valid)
Second display update rate	**Second display update rate**
Standard display update rate	**Standard display update rate**
Modbus client manual recovery	**Modbus client manual recovery**
Modbus master manual recovery	**Modbus master manual recovery**
Reset timer	**Timer Reset** [ALL] (when all timers are reset)
	Timer Reset [Timer number](when not all timers are reset)
Reset the match time timer	**Match time timer reset** [Timer number]
Switch on the event level switch	**Event level switch on** [Switch number]
Switch off the event level switch	**Event level switch off** [Switch number]
Event edge switch	**Event edge switch** [Switch number]
Change to setting mode	**Change to setting mode**
Change to basic setting mode	**Change to basic setting mode**
Change to operation mode	**MoveOpe**
Write to a communication input channel	**Writing to communication input channel**[CH Channel number and set value (the text in the data file is displayed)]
Execute Modbus client exchange	**Modbus client exchange execution**[CMD Channel number and set value (the text in the data file is displayed)]
Execute Modbus master exchange	**Modbus master exchange execution**[CMD Channel number and set value (the text in the data file is displayed)]
Save settings in setting mode	**Settings saved in setting mode**
Load settings in setting mode	**Settings loaded in setting mode**
Load settings in basic setting mode	**Settings loaded in basic setting mode**
Clear 1	**Clear 1**
Clear 2	**Clear 2**
Clear 3	**Clear 3**
Clear 4	**Clear 4**
Calibration correction complete Calibration correction period expiry	**Input calibration finished** **Due date for the next input calibration is over**
Change setting mode settings	**Change configuration [**setting file sequence number**](Set mode)**
Change basic setting mode settings	**Change configuration [**setting file sequence number**](Basic setting mode)**
Change settings related to user registration	**Change configuration [**setting file sequence number**](Login information)**
Change setting mode settings and basic setting mode settings	**Change configuration [**setting file sequence number**](Basic setting mode & Set mode)**
Change the setting mode settings and settings related to user registration	**Change configuration [**setting file sequence number**](Set mode & Login information)**
Change the basic setting mode settings and settings related to user registration	**Change configuration [**setting file sequence number**](Basic setting mode & Login information)**
Change settings [No] (all)	**Change configuration [**setting file sequence number**](all)**
Set an alarm	**AlarmSet [**CH Channel number/Lvl Alarm level**]**
Change a calibration correction point.	**Input calibration point change [**CH Channel number/Pt Calibration point**]**
Change a calibration correction value.	**Input calibration value change [**CH Channel number/Pt Calibration point**]**
Sets an alarm delay	**AlmDlaySet [**CH Channel number**]**
Select a message	**Set message [**Message number**]**
Set the data save destination folder	**FolderSet**

Additional Information

For log entries that cannot be displayed in a single line, the **Data Display** button is enabled. The button will not appear for DX100P or DX200P.
When the operation is one of the operations listed in the following table, clicking Data Display opens the Additional Info. dialog shown in step 3 on the previous page.

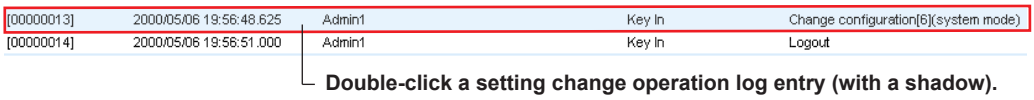
Operation
AlarmSet[CH Channel number/Lvl Alarm level]
Input calibration point change[CH Channel number/Pt Calibration point]
Input calibration value change[CH Channel number/Pt Calibration point]
AlmDlaySet[CH Channel number]
Set message[Message number]
FolderSet

3.6.2 Starting the Hardware Configurator* and Viewing Operation Logs

* DAQSTANDARD (DXA120) Hardware Configurator

Procedure

1 On the Operation Log tabbed page, double-click an entry that is emphasized with text shadowing (operation log entry of setting change).


[00000013] 2000/05/06 19:56:48.625 Admin1 Key In Change configuration[6](system mode)
[00000014] 2000/05/06 19:56:51.000 Admin1 Key In Logout
Double-click a setting change operation log entry (with a shadow).

DAQSTANDARD Hardware Configurator starts and displays settings.

Explanation

You can use the configuration software to view all the settings of the recorder that took effect after changes were made.
The table below shows the types of operations in a log that enable you to start the configuration software.

Model	Display
DX100P, DX200P	Change settings [No]
	Change settings [No] (system mode)
	Change settings [No] (engineering mode)
	Change settings [No] (system and engineering modes)
	Change settings [No] (login information)
	Change settings [No] (system mode and login information)
	Change settings [No] (login information and engineering modes)
	Change settings [No] (all)
DX1000, DX1000N DX2000 with the /AS1 option	Change settings [No] (setting mode)
	Change settings [No] (basic setting mode)
	Change settings [No] (login information)
	Change settings [No] (basic setting mode and setting mode)
	Change settings [No] (login information and setting mode)
	Change settings [No] (basic setting mode and login information)
	Change settings [No] (all)

These types of entries are displayed with bold characters as shown below.
(The shading in the background indicates that the entry is within the cursor range.)

Display	Description
[00032566] 2008/01/03 22:58:25.925	Indicates that this entry is a setting change within the cursor range and that the configuration software can be started
[00032566] 2008/01/03 22:58:25.925	Indicates that this entry is a setting change outside the cursor range and that the configuration software can be started

Note

To start Hardware Configurator and display the settings of data files, install Hardware Configurator in the same folder as Universal Viewer.
Hardware Configurator will not start if:

- The entry you double-clicked is not a log of configuration changes.
- Hardware Configurator was not installed when you started Data Viewer.
- Hardware Configurator is not installed when you double-click the list.
- The corresponding setup file cannot be found..

3.7 Displaying and Converting a TLOG File (CX1000/CX2000, DX100/DX200/DX200C, DX100P/DX200P, or MV100/MV200)

You can display TLOG files created by a CX1000/CX2000, DX100/DX200/DX200C, DX100P/DX200P, or MV100/MV200. TLOG files have .dtg extensions.

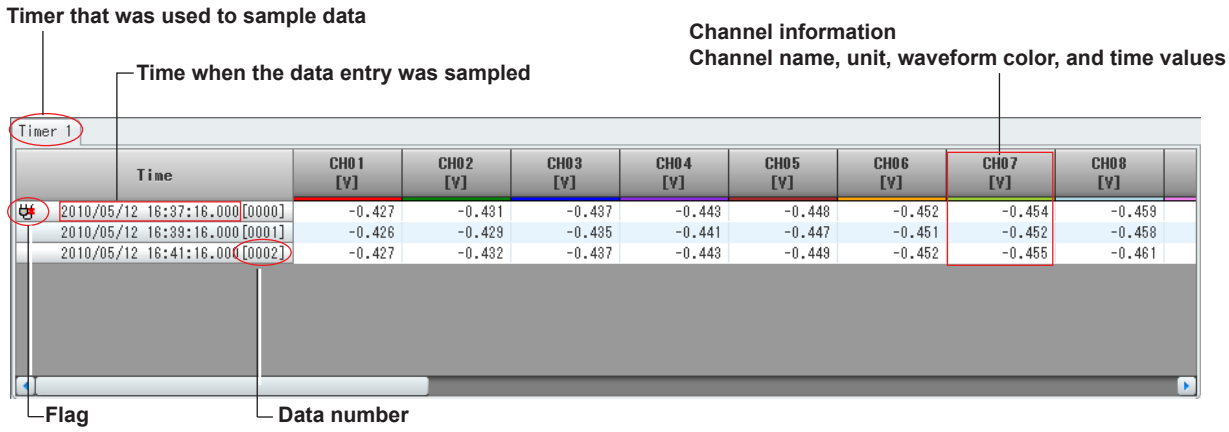
3.7.1 TLOG File Display Window

The TLOG file display window shows data of different timers collected during TLOG memory sampling. Digital values are grouped by timers and displayed on separate tabs.

Procedure

1 Open a TLOG file.

On the **File** menu, click **Open** to select the TLOG file you want to open. You can also click **Open** on the toolbar.
Data will appear.
Three timers can be used during TLOG memory sampling. The data of the timer with the smallest number is displayed on the front-most tab.



Explanation

Switching the Channel String

On the **View** menu, click **Channel** or **Tag No.** to select the display mode.

Switching the Time Display Format

On the **View** menu, click **Date** or **Time** to select the format.

Showing or Hiding Data Numbers

On the **View** menu, turn on **Data No.** to show data numbers after timestamps. Turn it off to hide them.

Showing or Hiding Flags

One the **View** menu, turn on **Flags** to show the following status information.

Display	Description
	Stopped TLOG computation.
	The recorder's date and time were changed during TLOG computation.
	Power failure occurred during TLOG computation.

If multiple flags are present, they are displayed overlapped with the following precedence from top to bottom: stop, time change, and power failure.

Displaying TLOG File Information

On the **Information** menu, click **About Document** to view information about the displayed TLOG file.

▶ Viewing data file information (**section 2.4**)

3.7.2 Converting a TLOG File

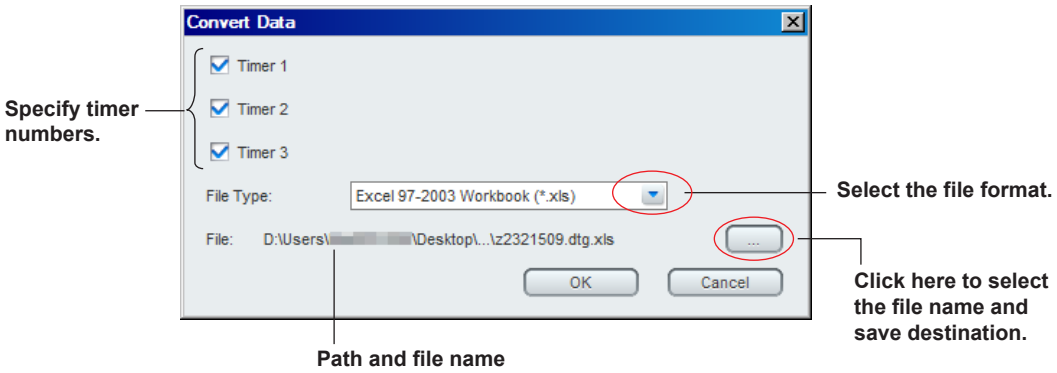
The sampled data in a TLOG data file can be converted and saved in Excel or ASCII format. Use the Convert Data dialog box to specify the settings for the data conversion.

Procedure

1. On the **Convert** menu, click **Convert Data**.
   The TLOG Convert Data dialog box appears.

2. Specify the settings for the file conversion.

   The sampled data is saved in groups of timers. Select which timer to convert the data of.



3. After you finish configuring the settings, click **OK**.
   The data will be converted.

3.8 Viewing Report Files

You can view data in report files as digital (numeric) values.

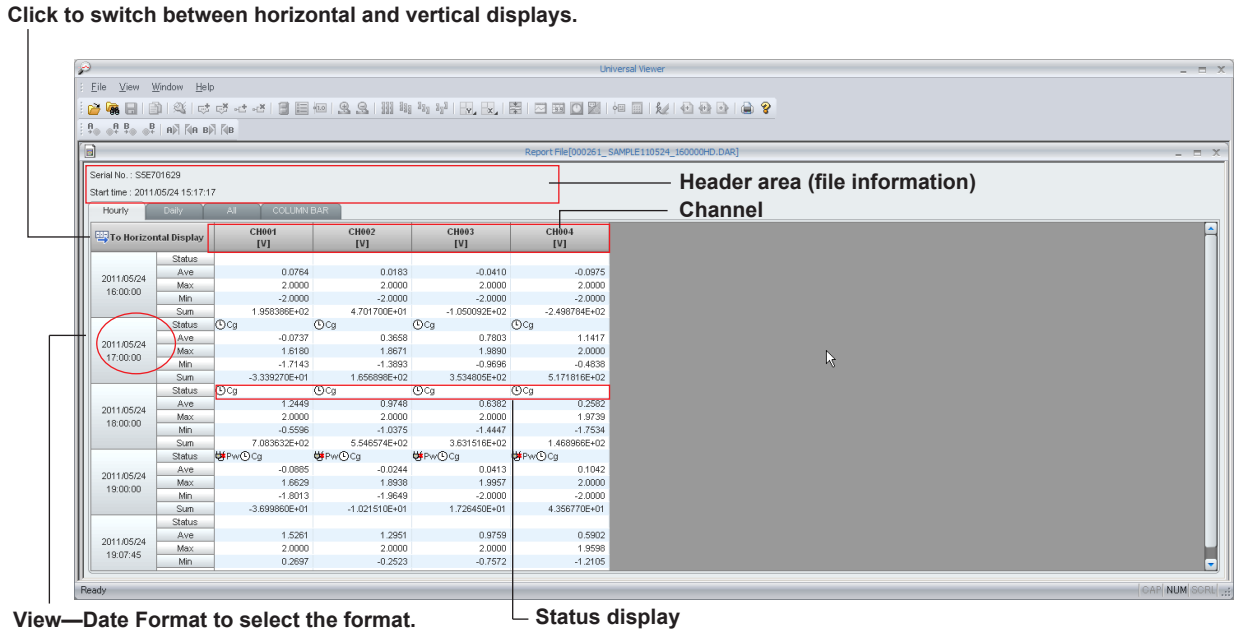
3.8.1 Report File Display Window

The report file display window displays data from files with .DAR or .GRE extensions.

Procedure

1. On the **File** menu, click **Open**. Or, click **Open** on the toolbar.
2. Select the report file that you want to display.

   The report will appear. The figure below is an example of a report file containing hourly and daily reports displayed in horizontal format.


Click to switch between horizontal and vertical displays.
Header area (file information)
Channel
Status display
View—Date Format to select the format.

Explanation

The report file display window consists of a header area and multiple tabbed pages described below. Data in a file are displayed in different tabbed pages according to their type.

Hourly tab	Displays hourly reports in the file in a spreadsheet
Daily tab	Displays daily reports in the file in a spreadsheet
Weekly tab	Displays weekly reports in the file.
Monthly tab	Displays monthly reports in the file in a spreadsheet
Batch Report tab	Displays batch reports in the file in a spreadsheet
DailyCustom tab	Displays custom daily report data in the file in a spreadsheet
Free tab	Displays free data in the file in a spreadsheet
All tab	Displays in a spreadsheet hourly, daily, weekly, monthly, batch, and custom-daily reports and free data.
Column Bar tab	Displays the sum of each tabbed page above in a stacked bar graph format.

Note

Not all the tabbed pages are displayed, only those whose data is included in the report file.

You can perform the following operations on the report file display window.

Switching the Channel String

On the **View** menu, click **Channel**, **Tag No.** or **Tag Comment** to select the channel display mode. This also changes the channel names in the legend on the Column Bar tab.

Switching the Time Display Format

On the **View** menu, click **Date Format** to select the date format. This also changes the date format of the time axis on the Column Bar tab.

Switching the Sheet Display Direction

Click the horizontal/vertical display switch button to arrange the channels vertically (vertical display) or arrange the channels horizontally (horizontal display).

The data display area shows the following information.

Status

The events that occurred during the creation of the report are displayed using icons and text.

Display	Status	Description
Er	Error	A measurement or computation error occurred during the period over which the report was created.
Ov	Over	A range-over or computation overflow occurred during the period over which the report was created.
Pw	Blackout	A power failure occurred during the period over which the report was created.
Cg	Time Correction	The time was changed during the period over which the report was created.
Bo	Burnout	A burn out occurred during the period over which the report was created.

Ave

The average value during the period over which the report was created.

Max

The maximum value during the period over which the report was created.

Min

The minimum value during the period over which the report was created.

Sum

The sum value during the period over which the report was created.

Inst

The instantaneous value when the report was created.

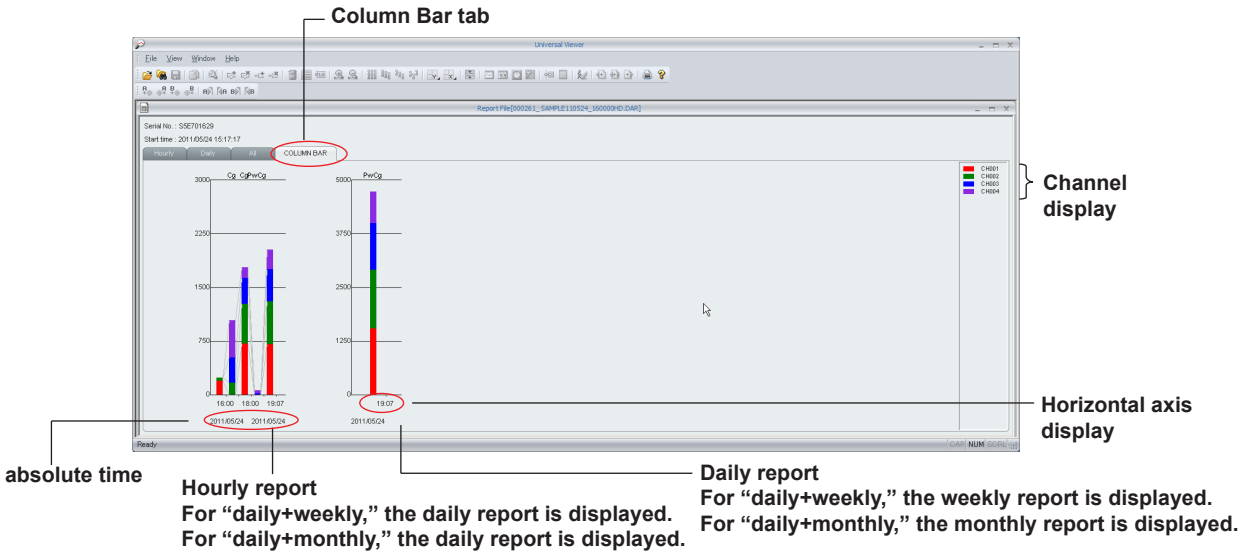
The Ave, Max, Min, Sum, and Inst values are displayed only if they had been specified in the report file creation settings.

Report Type (All tab)

On the All tabbed page, a summary of each tabbed page is displayed.
Therefore, the report type (hourly, daily, weekly, monthly, batch, custom-daily, or free) is shown next to the time display.

Stacked Bar Graph Display (Column Bar tab)

If the report data contains sum values, stacked bar graphs will be drawn on the Column Bar tabbed page. In reference to the first channel whose sum value is greater than or equal to zero, all channels whose unit is the same as the reference channel or all channels whose sum value is greater than or equal to zero are summed and displayed in a bar graph.


Column Bar tab
Channel display
Horizontal axis display
absolute time
Hourly report
For “daily+weekly,” the daily report is displayed.
For “daily+monthly,” the daily report is displayed.
Daily report
For “daily+weekly,” the weekly report is displayed.
For “daily+monthly,” the monthly report is displayed.

The tabs are displayed from left to right in the following order: hourly, daily, weekly, monthly, batch, custom-daily, and free.

Note

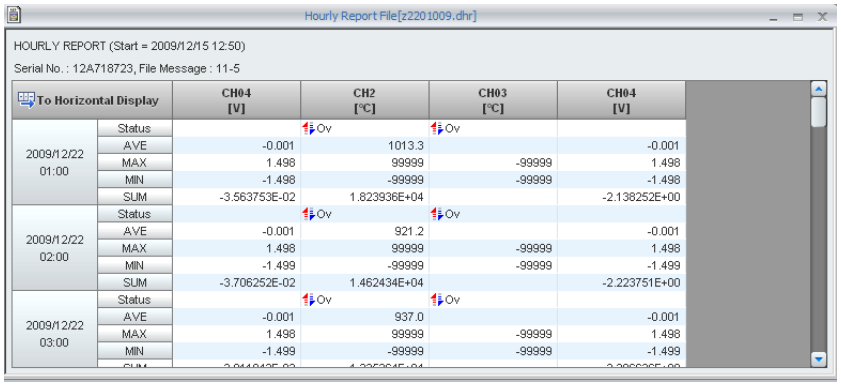
- You cannot change the channel colors of bar graphs.
- The horizontal axis and the time display format vary depending on the file type. You cannot change them.
- All channels in the report file are displayed in a single window.
- Channels that contain errors, over-range, or negative values are not displayed.

3.8.2 Hourly, Daily, Weekly, and Monthly Report File Display Window (CX1000/CX2000, DX100/DX200, DX100P/DX200P, or MV100/MV200)

The hourly, daily, weekly, and monthly report file display window displays data from report files with .dhr, .ddr, .dwr, and .dmr extensions.

Procedure

1. On the **File** menu, click **Open**. Or, click **Open** on the toolbar.
2. Select the report file that you want to display.
   Data will be displayed using digital values.



Explanation

The hourly, daily, weekly, and monthly report file display window displays the content of a report in a header and spreadsheet areas. The following items are displayed.

Display		Description	
Header area	HOURLY REPORT	Report type	Hourly report
	DAILY REPORT		Daily report
	WEEKLY REPORT		Weekly report
	MONTHLY REPORT		Monthly report
	Serial No.	Serial number	Serial number of the recorder
	File Message	File message	File header string specified on the recorder at the time the data file was created.
Spreadsheet area	CH [*number*] [*unit*]	Channel number Unit	
	Date and time		Format specified in time display
	Status	Status	Event that occurred during the creation of data
	AVE	Average value	
	MAX	Maximum value	
	MIN	Minimum value	
	SUM	Sum value	

Note

- The displayed information of Status is the same as that in the report file display window.
- You can switch the time display format and the spreadsheet display direction. The strings displayed for channels cannot be changed.

3.9 Viewing Manual Sampled Data Files

This section explains how to view data in manual sampled data files.

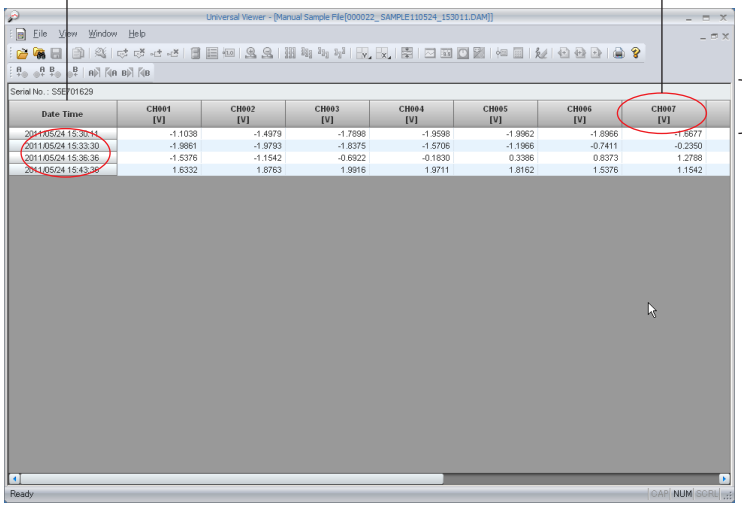
Procedure

1. On the **File** menu, click **Open**. Or, click **Open** on the toolbar.

2. Select a manual sampled data file.
   When you open the file, the corresponding data will appear. The figure below shows the window for files with .GMN and .DAM extensions.

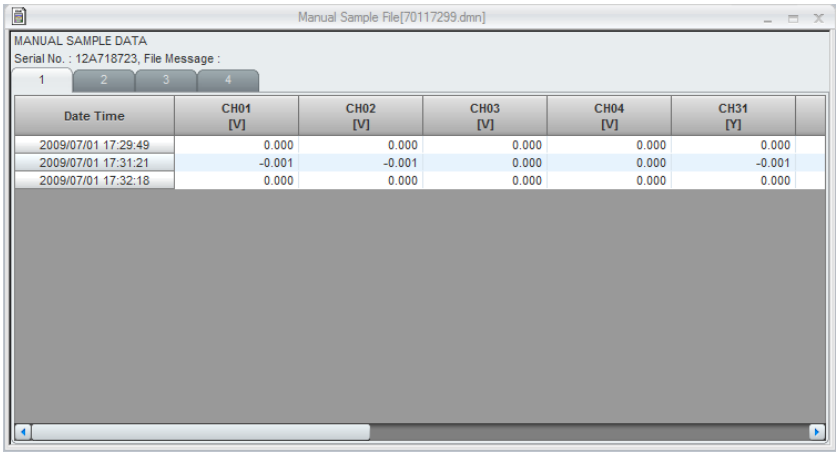
Name and unit of the sampling channel
Use the View menu to select channel, tag No., or tag comment.

Date and time that the manual sample was taken.
View—Date Format to select the format.



Manual Sampled Data Files with the .dmn Extension

In a display window showing the contents of a CX1000, CX2000, DX100, DX200, DX200C, MV100, or MV200 manual sampled data file (.dmn extension), if the file contains data samples that were sampled under different conditions, they are displayed in separate tabs.



Note

- The strings displayed for channels cannot be changed.
- If any of the conditions below apply, another tabbed page will be added.
  Each time the measurement mode of a measurement channel is changed between SKIP and another mode
  Each time a measurement channel is switched between on and off
  Each time a channel unit is changed

3.10 Converting Data

You can convert measured data, alarms, and other additional information included in display and event data files to Excel or ASCII format and save them.

▶ Converting a TLOG file (**section 3.7.2**)

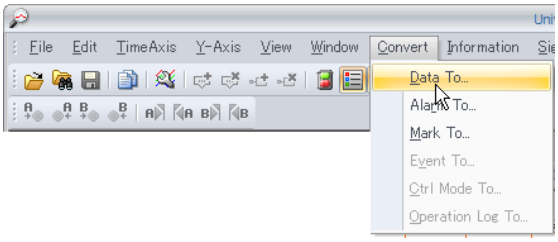
3.10.1 Converting Measured Data

Use the Convert Data dialog box to specify the settings for converting the displayed data.

Procedure

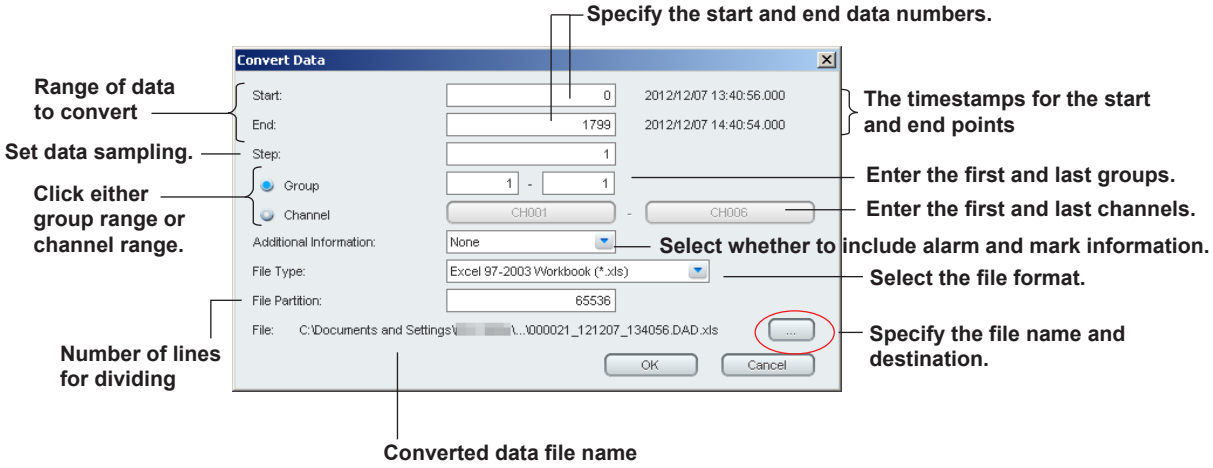
1 In the window, display the file that you want to convert and save.

2 On the **Convert** menu, click **Data To**.



The Convert Data dialog box appears.

3 Specify the settings for the file conversion.



4 After you finish configuring the settings, click **OK**.

The data will be converted.

Explanation

Start and End Points

Specify the range of data to convert.
The range specified by cursors A and B are assigned, respectively, to the start and end points. If you have not set cursors A and B or have cleared them, the start point data number will be set to zero, and the end point data number will be set to one less than the total number of data points.

Step

To keep the data after the conversion from becoming too large, you can sample data.
You can specify sampling in steps. To convert all the data in the specified range, set the step number to 1.

Group or Channel

If you select Group, enter the range of groups to convert.
If you select Channel, enter the range of channels to convert.

Additional Information

You can select whether to include alarm and mark information in the conversion.
The available options vary depending on whether you selected Group or Channel, described above.

Group or Channel		Additional Information Options
Group	The first group and the last group are the same.	None, With Alarm/Message
	The first group and the last group are different.	None, With Alarm
Channel		None, With Alarm

Data File Type

Number of Lines per File

File Type	Number of Lines per File Input Range	File Name Extension
Excel97 to 2003 Workbook	10000 to 65536	xls
Excel Workbook	10000 to 1048576	xlsx
ASCII File	—	txt

Specifying the File Name and Save Destination

Click the "..." button to change the save destination or the name of the file to save the converted data. The Change the file name dialog box appears.

The table below shows the default settings.

Setup Item	Default Value
Start point	Cursor A position or zero
End point	Cursor B position or the last data number of the data set
Number of steps	1
Group or Channel	Group
First group number	Currently displayed group
Last group number	Currently displayed group
First channel number	Minimum channel number in the data file
Last channel number	Maximum channel number in the data file
Additional information	None
File Type	Excel 97-2003 Workbook (*.xls)
Number of lines for dividing	65536
Converted data file name	File name shown in the window

Note

- The converted data file name will vary depending on whether the file includes batch information. If a batch number or lot number is specified, the default file name will include the number.
- Do not specify the external storage medium as the save destination because it will take a long period of time to save the file.
- Do not specify the root directory as the save destination.
- Make sure you have enough disk space at the destination.

3.10.2 Converting Alarm, Mark, Event, Control Mode, and Operation Log Information

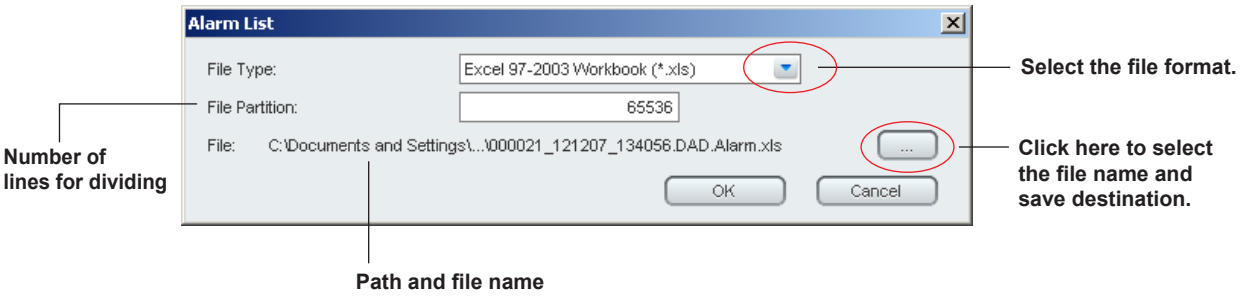
Additional information (alarm, mark, event, control mode, and operation log) in the displayed data file can be converted and saved separately.
The example below shows how to convert alarm information.

Procedure

1. In the window, display the file that you want to convert and save the information of.
2. On the **Convert** menu, click **Alarm To**.

The Alarm To dialog box appears.

3. Specify the settings for the file conversion.



4. After you finish configuring the settings, click **OK**.

   The data will be converted.

Explanation

Alarm, mark, event, control mode, and operation log information in display data files and event data files can be converted and saved separately.
On the **Convert** menu, select the information that you want to save. Then, in the dialog box that appears, configure the settings for the data conversion. The procedure and settings are the same for all types of information.

Output File Type and the Number of Lines per File

File Type	Number of Lines per File Input Range	File Name Extension
Excel97 to 2003 Workbook	10000 to 65536	xls
Excel Workbook	10000 to 1048576	xlsx
ASCII File	—	txt

Note

If you want to list the information in the window, you can use the Alarm/Mark window. For displaying a list of alarms or marks, see **section 3.4**. For displaying a list of events or control modes, see **section 3.5**. For displaying a list of operation log entries, see **section 3.6**.

Conversion Examples

Excel File

	B	C	D	E	F	G	H	I	J	K
1	Ch.	Tag No.	TagComment	Level	Type	No.	Date	Time	Sec.	
2	CH003			L3	H	27	2012/12/07	13:41:50	0.000	
3	CH001			L1	H	102	2012/12/07	13:44:20	0.000	
4	CH004			L4	L	281	2012/12/07	13:50:18	0.000	
5	CH002			L2	L	326	2012/12/07	13:51:48	0.000	
6	CH004			L4	L	357	2012/12/07	13:52:50	0.000	
7	CH002			L2	L	432	2012/12/07	13:55:20	0.000	
8	CH003			L3	H	671	2012/12/07	14:03:18	0.000	
9	CH001			L1	H	716	2012/12/07	14:04:48	0.000	
10	CH003			L3	H	747	2012/12/07	14:05:50	0.000	
11	CH001			L1	H	822	2012/12/07	14:08:20	0.000	
12	CH004			L4	L	1001	2012/12/07	14:14:18	0.000	
13	CH002			L2	L	1046	2012/12/07	14:15:48	0.000	
14	CH004			L4	L	1077	2012/12/07	14:16:50	0.000	
15	CH002			L2	L	1152	2012/12/07	14:19:20	0.000	
16	CH003			L3	H	1391	2012/12/07	14:27:18	0.000	
17	CH001			L1	H	1436	2012/12/07	14:28:48	0.000	
18	CH003			L3	H	1467	2012/12/07	14:29:50	0.000	
19	CH001			L1	H	1542	2012/12/07	14:32:20	0.000	
20	CH004			L4	L	1721	2012/12/07	14:38:18	0.000	
21	CH002			L2	L	1766	2012/12/07	14:39:48	0.000	
22	CH004			L4	L	1797	2012/12/07	14:40:50	0.000	
23										

ASCII File

```
"Status","Ch.","Tag No.","TagComment","Level","Type","No.","Date","Time","Sec."
"OFF","CH003","","","L3","H",      27,"2012/12/07","13:41:50",    0.000
"OFF","CH001","","","L1","H",     102,"2012/12/07","13:44:20",    0.000
"ON","CH004","","","L4","L",      281,"2012/12/07","13:50:18",    0.000
"ON","CH002","","","L2","L",      326,"2012/12/07","13:51:48",    0.000
"OFF","CH004","","","L4","L",     357,"2012/12/07","13:52:50",    0.000
"OFF","CH002","","","L2","L",     432,"2012/12/07","13:55:20",    0.000
"ON","CH003","","","L3","H",      671,"2012/12/07","14:03:18",    0.000
"ON","CH001","","","L1","H",      716,"2012/12/07","14:04:48",    0.000
"OFF","CH003","","","L3","H",     747,"2012/12/07","14:05:50",    0.000
"OFF","CH001","","","L1","H",     822,"2012/12/07","14:08:20",    0.000
"ON","CH004","","","L4","L",     1001,"2012/12/07","14:14:18",    0.000
"ON","CH002","","","L2","L",     1046,"2012/12/07","14:15:48",    0.000
"OFF","CH004","","","L4","L",    1077,"2012/12/07","14:16:50",    0.000
"OFF","CH002","","","L2","L",    1152,"2012/12/07","14:19:20",    0.000
"ON","CH003","","","L3","H",     1391,"2012/12/07","14:27:18",    0.000
"ON","CH001","","","L1","H",     1436,"2012/12/07","14:28:48",    0.000
"OFF","CH003","","","L3","H",    1467,"2012/12/07","14:29:50",    0.000
"OFF","CH001","","","L1","H",    1542,"2012/12/07","14:32:20",    0.000
"ON","CH004","","","L4","L",     1721,"2012/12/07","14:38:18",    0.000
"ON","CH002","","","L2","L",     1766,"2012/12/07","14:39:48",    0.000
"OFF","CH004","","","L4","L",    1797,"2012/12/07","14:40:50",    0.000
```

Blank

4.1 Saving Display Conditions

You can save the conditions for displaying data files and alarms that you have added on Universal Viewer as display condition files.

4.1.1 Saving a Display Condition File

If you save display conditions, the next time you open the same data file, the file will open using the saved display conditions.

Procedure

1 On the **File** menu, click **Save Display Setting**. Or, click **Save Display Setting** on the toolbar.
A display condition file (.vdx extension) will be saved in the same folder as the displayed data file.

Note

- Separate display condition files are created for display data files, event data files, and TLOG data files. The file name will be the same as the name of the data file but with a .vdx extension. The file will be saved in the same folder as the data file.
- When you close a data file, if the display conditions have been changed, a message “Save changes?” will appear. Clicking **Yes** overwrites the display condition file.
- Display condition files can be overwritten over and over again. You can also delete unneeded display condition files.

Explanation

The table below shows the display conditions that are saved to display condition files (.vdx extension).

Display Condition File of Display Data Files and Event Data Files

Conditions That Are Saved	
Time axis display mode (absolute or relative)	
Alarm display on/off	
Channel identification string mode (channel, tag No., or tag comment)	
Cursor A and B positions	
Color overview display on/off	Waveform display
Size of the color overview display area	Waveform display
Y-axis clip on/off	Waveform display
Cursor value display on/off	Waveform display
Cursor value display transparency	Waveform display
Image show/hide and size	Waveform display
Mark note information	Waveform display
Size of the Y-axis display area	Waveform and circular displays
Waveform thickness	Waveform and circular displays
Y-axis zone assignment	Waveform and circular displays
Y-axis grid line density	Waveform and circular displays
Legend display on/off	Waveform and circular displays
Legend display mode	Waveform and circular displays
Time axis grid line density	Waveform and circular displays
Active waveform	
Active Y-axis	
Selected group	
Alarm display (inside or outside)	Circular display
Time axis circular display cycle	Circular display
Selected commands on the View menu of the digital display	Digital display
Print settings (Print Setup dialog box)	
File information item on/off and print comment	

Conditions That Are Saved
Items specified in detailed settings (Display Group Setting dialog box)
Mark information

Display Condition File for TLOG Files

Conditions That Are Saved
Channel identification string mode (channel, tag No., or tag comment)
Date and time display settings
Data No. display on/off
Flag display on/off
TLOG file information item on/off and print comment
Timer number for TLOG file data conversion and file conversion format

4.1.2 Display Condition Files and Precedence

The following three types of display condition files are available for Universal Viewer.

Type	Extension	Procedure	Save Destination	Saved Information
Display condition file	.vdx	**Save Display Setting** on the **File** menu or **Save Display Setting** on the toolbar	Same folder as the data file	Display conditions only
Link settings file	.ldx	**Save Display Setting As** on the **File** menu	Specified location	Display conditions and file link information
Display template file	.tdx	**Save Template** on the **File** menu	Specified location	Display conditions excluding cursor data numbers, mark information, and mark note information

Illustration of How Display Conditions Are Saved to .vdx Files

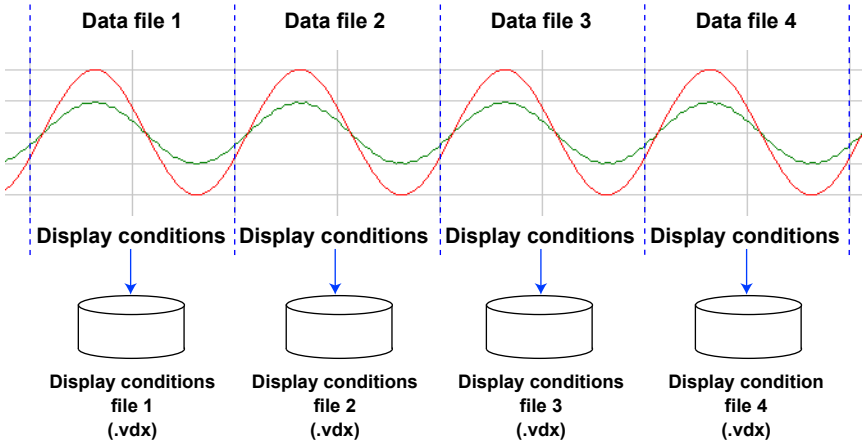
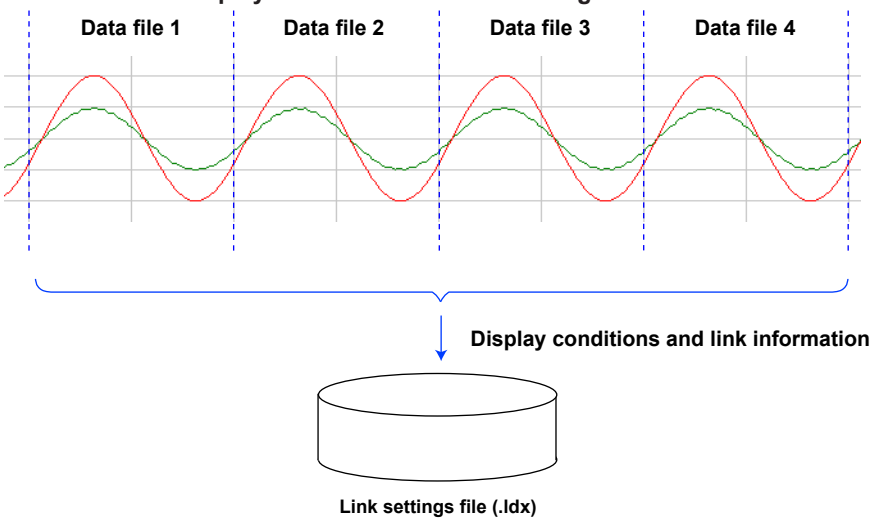


Illustration of How Display Conditions and Link Settings Are Saved to .ldx Files



When a data file is opened, the precedence of display condition files are as follows:
1. Display conditions included in the link settings file (.ldx)
2. Display condition file (.vdx)
3. Template file (.tdx)

The details of data file conditions are provided below.

For a Single Data File

- If there is no display condition file (.vdx) and a template file (.tdx) has not been applied, the file is displayed with default conditions.
- If there is a display condition file (.vdx), the file is displayed according to it, regardless of whether a template file (.tdx) is being used.

For Multiple Data Files (Linked files)

- If there is a link settings file (.ldx), and the data files are opened from it, the display conditions in it is applied, regardless of whether a template file (.tdx) is being used.
- If there is no display condition file (.vdx) for the first data file and a template file (.tdx) is not being used, the first file is displayed with default conditions.
- If there is no display condition file (.vdx) for the first data file and a template file (.tdx) is being used, the first file is displayed with the conditions of the template file.
  In this situation, if there is a display condition file (.vdx) for any of the subsequent data files, the mark information in it is applied.
- If there is a display condition file (.vdx) for the first data file, the file is displayed according to it, regardless of whether a template file (.tdx) is being used.
  In this situation, if there is a display condition file (.vdx) for any of the subsequent data files, the mark information in it is applied.

▶ Saving display template files (**section 4.2**)

4.2 Saving Display Templates

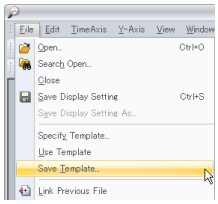
You can save display templates so that you can use them to display data files with the same conditions on Universal Viewer.

4.2.1 Saving a Display Template

Create a display template that you can use later to show display data files and event data files.

Procedure

1. Set the display conditions that you want to save as a template.
   On the **File** menu, click **Save Template**.



   A dialog box for saving the template appears.

2. Click **Save**.
   You can also specify the save destination and file name.
   A file with the .tdx extension will be saved.

Note

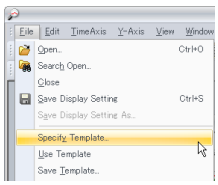
Display templates will not store file-specific information shown below.
- Cursor A and B data numbers
- Mark information
- Mark note information

4.2.2 Applying a Display Template

Specify a display template that you want to apply when showing display data files and event data files.

Procedure

1. On the **File** menu, click **Specify Template**.



   A dialog box for specifying the template appears.

2. Select the template you want to use, and click **Open**.
   The template has been specified.

Note

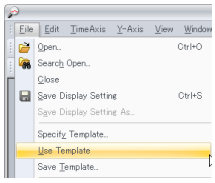
Specifying the template only selects the template file.
If you want to use it at all times, perform the procedure in “Using a Display Template” (next section).

4.2.3 Using a Display Template

Configure Universal Viewer so that the specified template is always used to show display data files and event data files.

Procedure

1. On the **File** menu, click **Use Template**.
   The command turns on, and the menu closes.



2. If you do not want to use a template, on the **File** menu, click **Use Template** again to turn off the command.

Note

Even when the Use Template command is turned on, if there is a display condition file (.vdx), the file will take precedence.

4.3 Printing

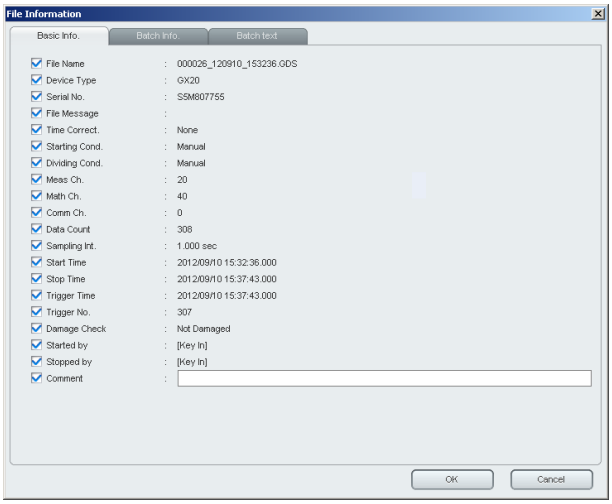
You can print display data files, event data files, manual sampled data files, TLOG files, and report files.

4.3.1 Specifying What to Print

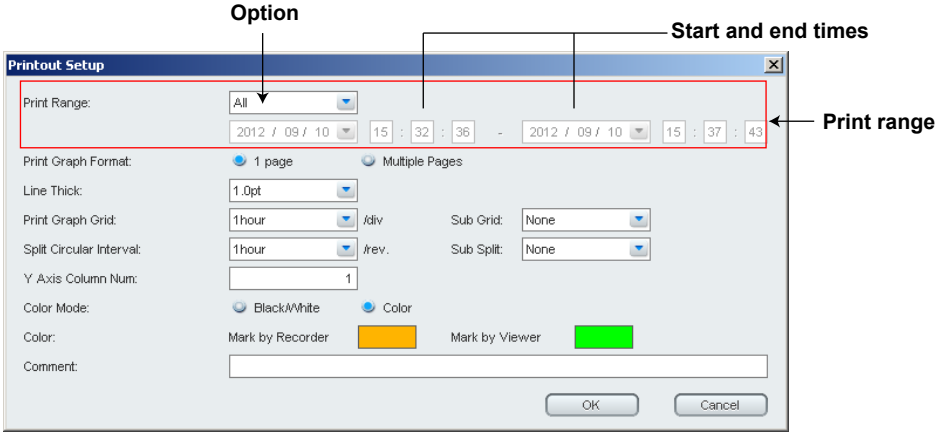
Specify what you want to print before printing.

Procedure

1. In the window, display the file that you want to print.
2. On the **Information** menu, click **About Document**.
   The About Document dialog box appears.



3. Select the check boxes for the items that you want to print in the header.
   (You can enter up to 128 characters for the comment.)
4. On the **File** menu, click **Print Settings**.
   The Print Settings dialog box appears.


Option
Start and end times
Print range
Printout Setup
Print Range: All
2012 / 09 / 10 15 : 32 : 36 - 2012 / 09 / 10 15 : 37 : 43
Print Graph Format: 1 page Multiple Pages
Line Thick: 1.0pt
Print Graph Grid: 1hour /div Sub Grid: None
Split Circular Interval: 1hour /rev. Sub Split: None
Y Axis Column Num: 1
Color Mode: Black/White Color
Color: Mark by Recorder Mark by Viewer
Comment:
OK
Cancel

5. Set the print conditions.
6. On the **File** menu, click **Print**.
   The data will be printed.

Note

- When printing a manual sampled data file or report file, steps 2 and 3 (header specification) are not available.
  Header information details: ▶ **section 2.4, "Viewing Data File Information"**
- When printing a manual sampled data file, TLOG file, or report file, steps 4 and 5 (print settings) are not available.

Explanation

Print Range

You can specify the print range by selecting all the data displayed, the range between cursors A and B, or a time range. If you set the print range to **Specify Time**, enter the start and end times.
If you select **Cursor** but there are no cursors, the start and end times of recording will be the range.

Print Graph Format

You can select **1 page** to print the specified range in the waveform display on one page or **Multiple Pages** to print at fixed pitches.
When **Multiple Pages** is selected, the times of the waveform graph grid are mapped to the fixed pitched scale lines and printed.

Line Thickness

Specify the line thickness to use in the waveform and circular displays.

Print Graph Grid

Specify the grid line spacing and auxiliary grid lines to use during waveform display printing.
Set **Print Graph Grid** first and then **Sub Grid**. The **Sub Grid** options vary depending on the **Print Graph Grid** setting.

Split Circular Interval

Specify the cycle and time-axis auxiliary grid lines to use during circular display printing.
Set **Split Circular Interval** first and then **Sub Split**. The **Sub Split** options vary depending on the **Split Circular Interval** setting.

Y Axis Column Num

Specify the Y-axis scale to use during waveform or circular printing in terms of the number of columns.
Specify to which column from the right of the Y-axis to print (including the active Y-axis). The columns of the active Y-axis are prioritized, and the Y-axis will be printed to the specified number of columns from the right.
For example, if you specify the number of columns to 1, only the active Y-axis will be printed. If you enter 3, the active Y-axis and the two Y-axes from the right are printed.

Color Mode

Specify black and white print or color print.

Print Color

You can specify different colors for the marks placed with the recorder and those placed with the software.

Comment

You can enter a print comment. The comment that you enter here is the same as that in the About Document dialog box described in step 2. Up to 128 characters are displayed.

The table below shows the relationship between the settings in the Print Settings dialog box and the different displays.

Setup Item	Display Window Type		
	Waveform display	Digital display	Circular display
Print Range	**Yes**	**Yes**	**Yes**
Print Graph Format	**Yes**		
Line Thickness	**Yes**		**Yes**
Print Graph Grid	**Yes**		
Sub Grid	**Yes**		
Split Circular Interval			**Yes**
Sub Split			**Yes**
Y Axis Column Num	**Yes**		**Yes**
Color Mode	**Yes**	**Yes**	**Yes**
Print Color	**Yes**	**Yes**	**Yes**
Comment	**Yes**	**Yes**	**Yes**

Print Preview

You can preview the print layout.
To do so, on the **File** menu, click **Print Preview**.

5.1 Troubleshooting

Messages

Code	Message	Description
3130	Do you want to sign this record?	This message appears to confirm whether you want to sign the record.
3131	Do you want to cancel?	Click OK to cancel the operation.

Warning Messages

Code	Message	Description or Cause	Corrective Action
1102	Converted data file will be overwritten. OK?	A file with the same name already exists at the save destination.	Rearrange the files so that there are no overlapping file names, or save with a different name.
3108	This file already exists. Replace existing file?	A file with the same name already exists at the save destination.	Rearrange the files so that there are no overlapping file names, or save with a different name.
3126	You cannot sign because the signature information of the files in the batch is inconsistent.	The signature information of the files in the batch is inconsistent.	Check the consistency in the file signature information. Contact the administrator if you cannot solve the problem.
3128	The file does not exist.	The file has been deleted or moved.	Refresh the file list, and check whether the file exists. Check the disk condition. Contact the administrator if you cannot solve the problem.
3129	Cannot link and display data because some of them have already been displayed.	A data file planned to be linked is already open, so it cannot be displayed.	Close such files, and try again.

Error Messages

Code	Message	Description	Corrective Action
201	Can't open. No YOKOGAWA binary file.	You are trying to open a file that is not in YOKOGAWA binary format.	Use compatible files.
203	There is no available data.	This message appears when there is no data in the file that you are trying to open.	Open a file containing data.
211	Can't write to file.	There is insufficient space in the directory, or the file is being used by another program.	Check the free space in the directory. Check whether the file is being used by another program.
212	Can't read file.	The file does not exist, or there is a problem with the file system.	Check whether the file exists. Check whether the file system is normal.
213	Can't open file.	The file does not exist, or there is a problem with the file system.	Check whether the file exists. Check whether the file system is normal.
214	Insufficient disk capacity.	Not enough free space in the directory.	Secure enough free space.
215	No such file.	The specified file does not exist.	Specify a different file.
218	No such folder.	The specified folder does not exist.	Specify a different folder.
250	Failed to start Adobe Reader.	Adobe Reader is not installed.	Install it.
3109	This name's directory already exists.		Check the directory name.
3110	Can't overwrite to file.	There is insufficient space in the directory, or the file is being used by another program.	Check the free space in the directory. Check whether the file is being used by another program.
3111	Can't write to file.	There is insufficient space in the directory, or the file is being used by another program.	Check the free space in the directory. Check whether the file is being used by another program.
3115	Too many data.	The number of data entries in the files that are to be linked exceeds 32 million entries, so the files cannot be linked.	Decrease the number of files to link.

Code	Message	Description	Corrective Action
3118	CRC illegal!	The file may be corrupt.	Check the disk condition, and recover the file. Contact the administrator if you cannot solve the problem.
3119	Already signed	Already signed at the current user level.	Contact the administrator if you cannot solve the problem.
3120	Not registered user.	User name, user ID, or password entry is incorrect.	Check them, and try again. Contact the administrator if you cannot solve the problem.
3121	There is no signature no.	The user does not have signature privileges.	Check the signature privileges. Contact the administrator if you cannot solve the problem.
3122	%d times password input failure.	Processing terminated. %d is the number of failures.	Enter the correct user name, user ID, and password. Contact the administrator if you cannot solve the problem.
3123	%d times password input failure. The user will be disabled.	This user's privileges will be disabled. %d is the number of failures.	Enter the correct password. Contact the administrator if you cannot solve the problem.
3124	%s File is not found.	The setting data file could not be found.	Place the relevant setting file in the folder containing the data file.
3125	Cannot perform authentication. There is a problem with the KDC server.	Unable to connect to the KDC server or unable to authenticate because the KDC server setting has been changed. KDC authentication is also not possible if the time zone on the PC is changed while Universal Viewer is running. Authentication is not possible if there a time difference of 5 minutes or more between the PC and the KDC server.	Contact your administrator.
3132	Failed to start Hardware Configurator.	Unable to start because Hardware Configurator is not available.	Install the Hardware Configurator.
3133	Insufficient sufficient memory to display all files.	Insufficient memory on the PC. This message appears when you open a file or link files.	Check the available memory on your PC. We recommend you increase the amount of memory or use a 64-bit OS and software.